# THE NET IMPACT OF BUSINESS FINLAND'S SUSTAINABLE MANUFACTURING PROGRAM

Results review 8.6.2021



#### Objectives

1) Create an understanding of how the companies in the Sustainable Manufacturing program impact the world within the dimensions of society, knowledge, health and environment and how their net impact differs from chosen comparison points

2) Determine ways for Business Finland to utilize net impact quantification in ie. the development of its funding activities, providing support for the program companies and reporting on the net impact of the program

3) Follow the development of the net impact of the companies and their comparison points over time in a systematic manner over 3 years

4) Allow for Business Finland to further acquaint with the net impact approach and the potential use cases within Business Finland's operational environment

#### Methodology

The analysis was conducted with the Upright net impact model. The model utilizes scientific articles and machine learning to summarize how products, services, and companies impact the environment, health of people, society as well as creation and distribution of knowledge.

Read more: uprightproject.com/about/model

#### Key results

Overall, the analysis finds that the vast majority of the SuMa program companies are net positive. When analysed all together, the companies generate positive impacts especially within the society and knowledge impact dimensions. The companies also perform well in terms of net impact compared to Nordic peer groups.

The program companies are however, currently very similar in terms of net impact compared to the hand-picked comparison group. This provides a good starting point for following net impact over time.

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- 2. Methodology: how was the analysis conducted?
- 3. Results: what is the net impact of the companies in the in the program?
- 4. Discussion: what is the so-what?

# **1. OBJECTIVES: WHAT WAS PURSUED?**

# **1.** UNDERSTAND HOW THE NET IMPACT OF COMPANIES IN THE PROGRAM DIFFER FROM SIMILAR COMPANIES

Create an understanding of how the companies in the Sustainable Manufacturing program impact the world within the dimensions of society, knowledge, health and environment and how their net impact differs from chosen comparison points

#### 2. DEFINE WAYS TO UTILIZE

Determine ways for Business Finland to utilize net impact quantification in ie. the development of its funding activities, providing support for the program companies and reporting on the net impact of the program

#### **3. TRACK IMPACT OVER TIME**

Follow the development of the net impact of the companies and their comparison points over time in a systematic manner over 3 years

#### **4.** ALLOW FOR FURTHER FAMILIARIZATION

Allow for Business Finland to further acquaint with the net impact approach and the potential use cases within Business Finland's operational environment

# 2. METHODOLOGY: HOW WAS THE ANALYSIS CONDUCTED?

#### **UPRIGHT'S MISSION**

# INCENTIVIZE COMPANIES TO OPTIMIZE THEIR NET IMPACT.

## WHO HOLDS THE POWER?

a.k.a. reasons for cynics to care, too

### INVESTORS

"Where do I dedicate my equity i.e. which company do I **invest** in?"

## **CUSTOMERS**

"Where do I dedicate my money i.e. which company do I **buy** from?"

### **EMPLOYEES**

"Where do I dedicate my time i.e. which company do I **work** for?"

#### A NEW TYPE OF QUANTIFICATION MODEL TO BRING OUT THE SHAPE OF A COMPANY



## Build a top-down model that

allocates all positive and negative impacts/values caused by the private sector globally to real companies.



BUILD A MODEL OF NET VALUE CREATION BY COMPANIES **SUB-TASKS** 

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#### **1. DEFINE PRODUCTS**

Build a network of all products and services traded globally and their links to one another (value chain relations, enablers, generalizations / specializations)



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Build a value creation grid aiming at covering all major positive and negative impacts companies have on the surrounding world

## THE UPRIGHT MODEL CONSIDERS 19 IMPACT CATEGORIES IN 4 DIMENSIONS

Impacts can be negative and positive

SOCIETY	Jobs Taxes Societal infrastructure Equality & human rights Societal stability
	Knowledge infrastructure Creating knowledge Distributing knowledge Scarce human capital
HEALTH	Physical diseases Mental diseases Nutrition Relationships Meaning & joy
	GHG emissions Non-GHG emissions Scarce natural resources Biodiversity Waste

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#### 3. ATTRIBUTE IMPACT

Attribute 100 % of each impact caused by companies globally to each node in the above mentioned network

#### **CLASSIFICATION OF SCIENTIFIC ARTICLES**

#### 200M+ scientific articles

from CORE database + datasets from e.g. IPCC and OECD

## INPUT impactTerm: cancer productTerm: tobacco abstract: this study investigates the effects of smoking in adolescents in ...

correctLabel: |

#### **CLASSIFICATION OF SCIENTIFIC ARTICLES**

#### 200M+ scientific articles

from CORE database + datasets from e.g. IPCC and OECD

- Deep neural network based on BERT\* from Google Research
- Pre-trained with the full Wikipedia corpus for transfer learning
- Trained with 35,000+ articles manually classified by Upright



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Build compositions consisting of products and services, weighing with revenue contributions, to form companies

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#### + FORM COMPANY GROUPS

Build compositions consisting of companies, weighing with funds invested/loan size/revenue/etc, to form funds/portfolios/industries/company groups/etc

## **Net impact ratio** =

positive impacts - negative impacts

positive impacts

#### **BEFORE JUMPING INTO THE RESULTS: WHAT DOES "NORMAL" LOOK LIKE?**

Aggregate net impact profile of US Fortune 500

	IMPACT	NECATIVE SCORE POSITIVE	
⊕	Society	-0.2 +1.9 +2.1	
	Jobs	+0.4 +0.4	
	Taxes	+0.9 +0.9	
	Societal infrastructure	+0.7 +0.7	
	Societal stability	-0.2 -0.1 +0.0	
	Equality & human rights	-0.0 / -0.0 / +0.0	
	Knowledge	-1.3 <b>-0.6</b> +0.7	
	Knowledge infrastructure	+0.2 = +0.2	
	Creating knowledge	+0.2 == +0.2	
	Distributing knowledge	-0.0 +0.2 +0.3	
	Scarce human capital	-1.3 -1.3	
Q	Health	-0.9 <b>+0.2</b> +1.1	
	Physical diseases	-0.4 +0.1 +0.5	
	Mental diseases	-0.1 • -0.0 • +0.1	
	Nutrition	-0.2 +0.0 +0.2	
	Relationships	-0.1 -0.0 +0.1	
	Meaning & joy	-0.1 • +0.1 • +0.2	
Ą	Environment	-2.1 <b>-2.0</b> +0.2	
	GHG emissions	-1.2 -1.1 +0.1	
	Non-GHG emissions	-0.4 -0.4 +0.0	
	Scarce natural resources	-0.1 -0.1 +0.0	
	Biodiversity	-0.1 -0.1 +0.0	
	Waste	-0.3 -0.2 ++0.0	
	Upright model version 0.3.485	_11% Net impact ratio	



# **3. RESULTS: WHAT IS THE NET IMPACT OF THE COMPANIES IN THE PROGRAM?**

## THE SCOPE OF THE ANALYSIS - 76 PROGRAM COMPANIES AND THEIR COMPARISON POINTS

89 M€ INVESTED	76+76 COMPANI	ES	+3,000 M€ REVENUE (program companies)
<ul> <li>AFRY Finland &amp; Conti Group</li> <li>Nordic ID &amp; Caen RFID</li> <li>Mapvision &amp; Proditec SAS</li> <li>Visual Components &amp; Cirrus Logistics Limited</li> <li>ABB &amp; Schneider Electric</li> <li>Roima Intelligence &amp; Advanced Clean Production Information Technology</li> <li>Stera Technologies &amp; Maysteel Industries</li> <li>Digia &amp; Enghouse Systems Limited</li> </ul>	<ul> <li>Delfoi &amp; Gizelis Robotics</li> <li>Driveco &amp; Futuremove</li> <li>Prosys OPC &amp; Mantis</li> <li>informatics</li> <li>Softability &amp; KMS Technology</li> <li>Fastems &amp; Yaskawa Motoman</li> <li>Epec &amp; Firstronic</li> <li>Atostek &amp; Glenmount Global</li> <li>Solutions, Inc.</li> <li>Wapice &amp; System Cube</li> <li>ATR Soft &amp; Unit4</li> <li>Procemex &amp; Papertech</li> <li>Futurice &amp; Accenture, Swisscom</li> <li>Catoria Accenture, Swisscom</li> </ul>	nbientia Group & Netwide edia Group emion & PTC iseN & lotics Labs riantum & Gain software ginets & Human Recognition stems wise & Softarex renco & Sci-Bi ombi Works & Jumpsource mac & Forge Lifting Gear evea & Nhance Technologies irbodeon & XG Sciences	<ul> <li>Stresstech &amp; Lambda Technologies Group</li> <li>Stereoscape &amp; Beyon4D</li> <li>Pixact &amp; Flotech</li> <li>Kaptas &amp; PPI-Multitask</li> <li>Valuemotive &amp; Xored Software</li> <li>Elematic &amp; Fox Blocks, Weckenmann</li> <li>Semantum &amp; Sekas</li> <li>Good Sign &amp; Recvue</li> <li>Promeco Group &amp; Aps</li> <li>Pegasor &amp; Naneos</li> </ul>

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<ul> <li>Actiw &amp; MHS Material Handling Systems</li> <li>Aava Ohjelmistot &amp; Norcron</li> <li>Indalgo &amp; Cognaisent</li> <li>Sitowise &amp; REPL</li> <li>Wirepas &amp; Franklin Wireless</li> <li>ControlThings &amp; Virtuosys</li> <li>Quva &amp; Trendminer</li> <li>Huld &amp; Creator</li> <li>HaVaMax Solutions &amp; Nassau E</li> <li>Livion &amp; Bixlabs</li> <li>Process Genius &amp; Xcelgo</li> <li>Ideascout &amp; Mobeedick</li> </ul>	<ul> <li>iProtoXi &amp; Dokotech</li> <li>Haltian &amp; Relayr</li> <li>LogisNext &amp; Toyota Forklifts UK</li> <li>Leanware &amp; Wics</li> <li>Materflow &amp; Slant 3D</li> <li>Houston Analytics &amp; Intellicompute</li> <li>CTRL Reality &amp; NexTech AR</li> <li>3D Formtech &amp; Slant 3D</li> <li>Cencorp Automation &amp; Trinity Holdings</li> <li>Bluugo &amp; Inconso</li> <li>Valossa Labs &amp; Green Key Tech</li> </ul>	<ul> <li>Millisecond &amp; Intellisense</li> <li>Wizense &amp; Ripples IoT</li> <li>3DStep &amp; Slant 3D</li> <li>Top Data Science &amp; Sparkflow</li> <li>Mideye &amp; Excalibur (Exc. sp. z.o.o)</li> <li>3D Talo Finland &amp; Chewed Pix Studios</li> <li>Treon &amp; Trek 2000 Internationa</li> <li>Vaisto Solutions &amp; U-Experten</li> <li>Sensmet &amp; Aquaread</li> <li>Nokeval &amp; Lufft</li> <li>Silo AI &amp; Smartia</li> </ul>	<ul> <li>JTA Connection &amp; Koops</li> <li>Norcar Automation &amp; Simplimatic Automation</li> </ul>		

#### **NET IMPACT PROFILE OF THE SUSTAINABLE MANUFACTURING PROGRAM COMPANIES\***

Many SuMa companies contribute the most positively to knowledge and society, with relatively small environmental impacts. Overall, 86% of the companies are net positive, yielding a highly net positive group profile.

Scarce human capital illustrates the **opportunity cost** of scarcely available human capital. This impact is often significant for high technology manufacturing, consulting, and software companies due to the large share of highly educated and skilled employees.

The use of environmental resources is modest. However, the **environmental benefits** created by SuMa companies are also relatively low. There **potential for improvement** in this area.

	IMPACT		NEGAT	IVE SC	ORE	POSITIVE	
⊕	Society		-0.	0   +	3.2		+3.3
	Jobs			+	-1.4	+1.4	
	Taxes			+	-1.6	+1.6	
	Societal infrastructure			+	-0.3	+0.3	
	Societal stability		-0.	0	-0.0	+0.0	
	Equality & human rights		-0	.0 -	-0.0	+0.0	
	Knowledge	-2.5		-	0.4	+2.1	
	Knowledge infrastructure			+	-0.8	+0.8	
	Creating knowledge			+	-0.7	+0.7	
	Distributing knowledge		-0	.0 +	-0.6	+0.6	
	Scarce human capital	-2.5		-	2.5		
Q	Health		-0.2	+	0.0	+0.2	
	Physical diseases		-0.1	- +	-0.0	+0.1	
	Mental diseases		-0.	.0 0.	-0.0	+0.0	
	Nutrition		-0.	0	-0.0	+0.0	
	Relationships		-0	.0 + +	-0.0	+0.0	
	Meaning & joy		-0.	0 + +	-0.0	• +0.1	
Ą	Environment		-1.0	-	0.8	+0.2	
	GHG emissions		-0.6		-0.5	+0.1	
	Non-GHG emissions		-0.1		0.1	• +0.1	
	Scarce natural resources		-0.	0 -	-0.0	+0.0	
	Biodiversity		-0.	0• -	-0.0	+0.0	
	Waste		-0.2	-	-0.1	+0.0	
	Upright model version <b>0.3.488</b> on 7th Jun. 2021 at 11:01 GMT+0			+36	5%	Net impact ratio Value set: Equal weights	

All companies **pay taxes and offer employment**. In addition, several companies contribute to societal infrastructure, i.e. the basic infrastructure our society needs to function: e.g. ABB's **power grid** solutions and AFRY's **energy power plant** engineering.

The group contains various companies that impact **knowledge** positively. Companies such as Wirepas and Treon produce products that are important for **knowledge infrastructure**, whereas Wapice's and Futurice's **consulting and digital design** services distribute knowledge.

The logic of the net impact ratio originates from the **net profit ratio**. It is the relative share of the positive impact the group creates over and above the resources they use.



#### A MAJORITY OF THE SUMA PROGRAM COMPANIES HAVE AN IMPACT ON KNOWLEDGE INFRASTRUCTURE

A drill down into the largest contributors of knowledge infrastructure

Company	Funds ⑦ invested, \$	Relative Positive Company score for Knowledge infrastructure	Contribution to fund's Positive impact on Knowledge infrastructure
Wirepas	4,242,458	2.48	13.84 %
ABB	30,233,676	0.33	13.11 %
Nordic ID	3,348,323	2.32	10.20 %
Bluugo	3,095,874	2.38	9.69 %
Pegasor	3,005,162	2.21	8.71 %
Mapvision	3,694,978	1.41	6.85 %
Delfoi	1,819,608	1.39	3.32 %
Haltian	2,345,764	0.97	2.98 %
Visual Components	2,168,168	0.85	2.44 %
Treon	1,401,626	1.31	2.41 %
Prosys OPC	857,397	1.76	1.98 %
Silo Al	1,620,309	0.82	1.74 %
Mevea	1,162,289	1.10	1.69 %

Even though the SuMa program companies operate in various industries and produce different products and services, there is one common denominator: **almost all of the companies** either directly or indirectly **have an impact on knowledge infrastructure**.

Both **physical products** (such as Nordic ID's RFID readers and tags) and **software** (such as Delfoi's production planning and robotics software) play a role in building infrastructure that allows for knowledge to be created and distributed..



#### **COMPANY PROFILE: NORDIC ID**

Nordic-ID's RFID technology solutions contribute primarily to knowledge infrastructure and the distribution of knowledge

Nordic ID serves clients in the **retail sector**. as well as logistics, transportation and construction. In enabling these industries to work efficiently, Nordic ID inherits small shares of both the negative and positive impacts of those industries. For example, customers operating in the logistics sector create GHG emissions but on the other hand, logistics operations are crucial for modern societal infrastructure.

ІМРАСТ	NECATIVE	SCORE	POSITIVE	Similar to other
Society	-0.1	+2.2	+2.3	companies Nordic ID pays
Jobs		+0.9	+0.9	
Taxes		+1.0	+1.0	taxes and offers
Societal infrastructure		+0.3	+0.3	employment
Societal stability	-0.0	-0.0	+0.0	omploymont
Equality & human rights	-0.0 •	-0.0	+0.0	
Knowledge	-1.0	+3.2	+4.2	
Knowledge infrastructure		+2.4	+2.4	
Creating knowledge		+0.1	• +0.1	<b>RFID tags</b> and <b>readers</b>
Distributing knowledge	-0.0	+1.7	+1.7	are an important part of
Scarce human capital	-1.0	-1.0		are an important part of
♡ Health	-0.2	+0.2	+0.4	infrastructure lo
Physical diseases	-0.1 🔳	+0.1	+0.2	
Mental diseases	-0.0	-0.0	+0.0	addition, the use of RFID
Nutrition	-0.0 (	+0.0	• +0.1	technology contributes to
Relationships	-0.0	+0.0	+0.0	teerinology contributes to
Meaning & joy	-0.0	+0.1	• +0.1	knowledge distribution.
↓ Environment	-1.0	-1.0	+0.1	
GHG emissions	-0.6	-0.5	+0.0	
Non-GHG emissions	-0.1 🔳	-0.1	+0.0	
Scarce natural resources	-0.1 •	-0.1	+0.0	
Biodiversity	-0.1 0	-0.1	+0.0	
Waste	-0.2 🔲	-0.2	+0.0	
Upright model version <b>0.3.488</b> on 7th Jun. 2021 at 11:03 GMT+0	+(	67%	Net impact ratio           Value set: Equal weights	

#### ON THE KNOWLEDGE DISTRIBUTION SIDE, SOFTWARE AND CONSULTING COMPANIES COME OUT STRONG

A drill down into the largest contributors of knowledge distribution

Company	Funds $^{\odot}$ invested, \$	Revenue, \$	Relative Positive Company score for Distributing knowledge	Contribution to fund's Positive impact on Distributing knowledge
Nordic ID	3,348,323	11,250,000	2.31	13.10 %
Wapice	1,621,440	24,000,000	4.17	11.46 %
Futurice	1,537,815	46,614,031	3.21	8.38 %
Aava Ohjelmistot	1,289,092	1,292,141	3.15	6.88 %
Houston Analytics	937,987	2,348,208	3.79	6.03 %
Silo Al	1,620,309	3,421,381	1.99	5.47 %
ATR Soft	982,094	5,921,269	3.26	5.43 %
ABB	30,233,676	2,010,720,000	0.10	5.19 %
Cencorp Automation	1,565,151	19,687,765	1.26	3.36 %
Valossa Labs	1,016,474	394,599	1.79	3.08 %
Indalgo	600,009	937,458	2.84	2.89 %
Huld	1,270,452	30,000,000	1.27	2.73 %
Ambientia	549,348	6,582,736	2.61	2.43 %
Treon	1,401,626	2,300,000	0.93	2.21 %



#### **COMPANY PROFILE: AAVA OHJELMISTOT**

ERP software distributes and creates new information but also makes industrial operations more efficient

Also in the case of Aava Ohjelmistot, some small slices of customers' impacts are allocated to the profile. The company operates for example in the industrial and ship transportation sectors.

	WRACT	NEOATIVE	00005	DODITU/F		
	IMPAGI	NEGATIVE	SCORE	POSITIVE		
•	Society	-0.1	+3.2	+3.3		
	Jobs		+1.4	+1.4		
	Taxes		+1.8	+1.8		In addition to knowledge
	Societal infrastructure		+0.0	+0.0		distribution. ERP software
	Societal stability	-0.0	-0.0	+0.0		can belo concreting
	Equality & human rights	-0.0 +	-0.0	+0.0		can help generating
	Knowledge	-3.6	+2.0		+5.7	insignts from operational
	Knowledge infrastructure		+0.4	+0.4		data and support for
	Creating knowledge		+3.1	+3.1		decision making.
	Distributing knowledge		+2.2	+2.2		e e e e e e e e e e e e e e e e e e e
	Scarce human capital	-3.6	-3.6			
Ø	Health	-0.3	-0.1	+0.2		
	Physical diseases	-0.3 🔳	-0.2	+0.0		
	Mental diseases	-0.0	-0.0	+0.0		On the other hand,
	Nutrition	-0.0	-0.0	+0.0		oporating in industries with
	Relationships	-0.0	+0.0	+0.0		operating in industries with
	Meaning & joy	-0.0	+0.1	• +0.1		large environmental
Ą	Environment	-2.0	-1.5	+0.5		footprints gives room for
	GHG emissions	-0.8	-0.4	+0.4		improvement: Aava's ERP
	Non-GHG emissions	-0.3 🔳	-0.2	+0.0		software can <b>make heav</b>
	Scarce natural resources	-0.3 🔳	-0.3	+0.0		Software carrinake neav
	Biodiversity	-0.1 •	-0.1			emitting industries
	Waste	-0.5	-0.5	+0.0		operate more efficiently
						which shows positively in
	Upright model <b>master</b> version on 7th Jun. 2021 at 11:27 GMT+0	+	38%	Net impact ratio Value set: Equal weights		the GHG impact.



#### ABOUT HALF OF THE SUMA PROGRAM COMPANIES HAVE SMALL POSITIVE IMPACTS ON GHG EMISSIONS

A drill down into the contributors of GHG emissions reductions\*

Company	Funds ⑦ invested, \$	Relative Positive Company score for GHG emissions	Contribution to fund's Positive impact on GHG emissions
Kaptas	11,405	0.93	0.07 %
Driveco	461,635	0.91	2.87 %
Pixact	422,598	0.65	1.86 %
Epec	1,947,632	0.62	8.16 %
AFRY Finland	2,478,308	0.52	8.77 %
Stresstech	309,230	0.51	1.08 %
Aava Ohjelmistot	1,289,092	0.43	3.77 %
Delfoi	1,819,608	0.39	4.82 %
Bluugo	3,095,874	0.37	7.85 %
Silo Al	1,620,309	0.35	3.82 %
Process Genius	183,016	0.25	0.31 %

A deep dive into the positive contributors in the GHG emissions category shows that **no individual company is especially highlighted** on the list.

Instead, several companies have some small GHG reduction impacts: for example through the optimisation of industrial processes (e.g. Kaptas, Pixact) or the electrification of fossil fuel based industries (e.g. Driveco).



#### **COMPANY PROFILE: DRIVECO**

Driveco's strong focus on electric and hybrid vehicles shows positively in the environment category

Similar to all companies operating in the road transport industry, **negative impacts from road accidents** are also visible in -Driveco's net impact profile.

	IMPACT	NEGATIVE	E SCORE	POSITIVE
•	Society	-0.0	+2.5	+2.5
•	lobs		+0.7	+0.7
	Taxes		+1.2	+12
	Societal infrastructure		+0.6	+0.6
	Societal stability	-0.0	+0.0	+0.0
	Equality & human rights	-0.0	+0.0	+0.0
_	Knowledge	10	0.0	
Ц	Knowledge	-1.0	-0.2	+0.8
	Knowledge infrastructure		+0.0	+0.0
	Creating knowledge		+0.7	+0.7
	Distributing knowledge	-0.0	+0.1	+0.1
	Scarce human capital	-1.0	-1.0	
$\heartsuit$	Health	-1.0	-0.6	+0.4
	Physical diseases	-0.7	-0.6	+0.1
	Mental diseases	-0.1	-0.1	+0.0
	Nutrition	-0.1	-0.1	+0.0
	Relationships	-0.0	+0.1	+0.1
	Meaning & joy	-0.1	+0.1	+0.2
Ą	Environment	-2.4	-0.6	+1.8
	GHG emissions	-1.4	-0.3	+1.1
	Non-GHG emissions	-0.7	+0.0	+0.7
	Scarce natural resources	-0.0	-0.0	+0.0
	Biodiversity	-0.1	-0.1	+0.0
	Waste	-0.2	-0.1	+0.0
	Upright model master version		+20%	Net impact ratio
	on 7th Jun. 2021 at 12:26 GMT+0		. 20 /0	Value set: Equal weights

Driveco's **telematics**, **marketing** and **car sharing** solutions enable passenger car transportation, which contributes to societal infrastructure.

Compared to diesel and gasoline vehicles, electric and hybrid vehicles create **less GHG and non-GHG** emissions - however, the amount of saved emissions **can vary** greatly **depending** on the **electricity production method**. In the Upright model, the global electricity mix is used unless more specific information is available.



#### **COMPANY PROFILE: KAPTAS**

Similar to many SuMa program companies, Kaptas create some positive environmental impacts by making industrial processes more efficient

IMPACT			NECATIVE	SCORE	POSITIVE		
Society	/		-0.1	+3.5		+3.7	
Jobs			-	+1.9	+1.9		
Taxes				+1.7	+1.7		
Societa	al infrastructure			+0.1	+0.1		
Societa	al stability		-0.1 🔍	-0.1	+0.0		
Equality	y & human rights		-0.0 •	-0.0	+0.0		
	edge	-3.4		-1.5	+1.9		Automation solutions for
- Knowle	edge infrastructure			+1.0	+1.0		the <b>pharmaceutical</b> and
Creatin	a knowledge			+0.7	+0.7		diagnostico industrios
Distribu	uting knowledge		-0.0	+0.2	+0.2		ulagnostics industries
Scarce	human capital	-3.4		-3.4			create positive health
♡ Health			-0.4	+0.6	+1.0		impacts - compared to
Physica	al diseases		-0.3	+0.5	+0.8		<ul> <li>other SuMa companies,</li> </ul>
Mental	diseases		-0.0 🛛	+0.1	+0.1		these are quite rare
Nutritio	n		-0.0	+0.0	+0.0		
Relation	nships		-0.0	-0.0	+0.0		
Meanin	ıg & joy		-0.0	+0.0	+0.0		
4 Enviror	nment		-1.3	-0.9	+0.4		Automation and
GHG er	missions		-0.6	-0.3	+0.3		optimication convisoo make
Non-Gł	HG emissions		-0.2 📟	-0.0	+0.1		optimisation services make
Scarce	natural resources		-0.1 0	-0.1	+0.0		industrial processes
Biodive	ersity		-0.1 •	-0.1	+0.0		more efficient and
Waste			-0.5	-0.4	+0.0		apporato omission savinas
							generale ernission savings.
Upright m on 7th Ju	nodel <b>master</b> version ın. 2021 at 12:57 GMT+0		+3	25%	Net impact ratio Value set: Equal weights		

Serving the **plastics industry** is challenging from a waste point of view.

#### COMPARISON BETWEEN THE SUSTAINABLE MANUFACTURING PROGRAM COMPANIES AND THE HAND-PICKED COMPARISON GROUP\*

The comparison group seems to perform slightly better, mainly due to the more net positive industries served

As the Scarce human capital and Jobs impacts are sensitive to changes in the **employee counts and revenues**, these can vary significantly over time when companies grow and their revenues change year to year.

For the purpose of tracking the program companies' development over time, following the development of SHC and Jobs is not as relevant as the changes achieved in the other impact categories.



Overall, the **shapes** of the net impact graphs are very **close to each other.** In most of the cases, the comparison companies produce similar kind of products and services as the SuMa program companies. However, small **differences in the industries companies serve** result in slightly different net impact ratios.



#### **COMPANY COMPARISON: MAPVISION VS. PRODITEC**

Even though both of the companies focus on quality management, Proditec's focus on the health industry leads to a significantly higher net impact ratio

Net impact ratio Mapvision is one of the Mapvision best funded companies in Proditec the SuMa program. As the comparison group's weighting is based on the IMPACT NECATIVE SCORE POSITIVE weights of their SuMa counterparts, Proditec's -0.0 +3.0+3.0⊕ Society -0.2 +2.2 +23 weight in the comparison group is also significant. +1.1+3.0-1.9 □ Knowledge Proditec is one reason for -18 +0.6+2.5 the comparison group's +0.2 -0.5 -0.3 C Health large health plusses. -0.5 +3.6+4.1-25 -2.3 +0.2 ∆ Environment -0.7 +0.0 -0.7 Upright model version 0.3.488 on 7th Jun. 2021 at 14:18 GMT+0

Both the SuMa program company Mapvision and the comparison company Proditec focus on quality assurance and inspection solutions.

23%

64%

However, large differences can be seen in the downstream of these companies' operations: Mapvision's focus on the automotive sector results in large negative environmental impacts, whereas Proditec's pharmaceutical solutions contribute positively to health.

#### **COMPARISON: DRIVECO VS. FUTUREMOVE**

Driveco's focus on electric vehicles results in a much more positive net impact profile compared to Futuremove

Based on publicly available information, **Futuremove does not** specifically **focus on electric or hybrid** 

vehicles. This is the reason behind the larger negative environmental footprint compared to Driveco. In addition, negative health impacts are higher: this is related to the carcinogenicity of petroleum products.



Both the SuMa program company Driveco and the comparison company Futuremove focus on **providing solutions for road vehicles.** 

#### **COMPANY COMPARISON: JTA-CONNECTION VS. KOOPS**

Koops' automation engineering for the transportation, energy storage, and life sciences industries creates differences in the net impact profile compared to JTA-Connection

In general, as many of the SuMa companies have quite small impacts from their own direct operations and the upstream, **the downstream impacts** (impacts created when products/services are used) **affect the overall profile significantly**.

Food for thought: by openly communicating and paying special attention to what industries the SuMa companies serve and what operations they enable, the overall impact can be significantly improved.



Both the SuMa program company JTA-Connection and the comparison company Koops focus on **automation engineering**.

However, Koops' strong focus on the **transportation sector**, and on the other hand, **energy storages** and **life sciences industry**, show in the health and environment categories: compared to JTA, Koops creates slightly more emission but also creates positive health and environmental impacts.

Upright model **master** version on 6th Jun. 2021 at 18:38 GMT+0

#### SUMA PROGRAM COMPANIES DIVIDED INTO 3 SUB-GROUPS\* REVEALS DIFFERENCES ESPECIALLY WITHIN KNOWLEDGE IMPACTS

Companies focusing on software, consulting and other services seem to tie up more scarce human resources





#### **COMPANY PROFILE: ABB**

ABB's net impact profile is typical to many of the other companies producing physical products: environmental resources are used to produce value to societal and/or knowledge infrastructure

For more established companies such as ABB, the scarce human capital required per revenue is usually lower than for early stage companies.

	IMPACT	NEGATIVE	SCORE	POSITIVE	
⊕	Society	-0.0	+2.5	+2.5	
	Jobs		+0.8	+0.8	
	Taxes		+1.2	+1.2	
	Societal infrastructure		+0.5	+0.5	
	Societal stability	-0.0 #	-0.0	+0.0	
	Equality & human rights	-0.0	+0.0	+0.0	
	Knowledge	-1.4	-0.6	+0.8	
	Knowledge infrastructure		+0.3	+0.3	
	Creating knowledge		+0.4	+0.4	
	Distributing knowledge	-0.0	+0.1	+0.1	
	Scarce human capital	-1.4	-1.4		
Ø	Health	-0.2	+0.0	+0.2	
	Physical diseases	-0.1 📼	+0.0	<b>+</b> 0.1	
	Mental diseases	-0.0	-0.0	+0.0	
	Nutrition	-0.0	-0.0	+0.0	
	Relationships	-0.0	-0.0	+0.0	
	Meaning & joy	-0.0	+0.0	+0.0	
Ą	Environment	-1.2	-0.9	+0.3	ABB's produ
	GHG emissions	-0.7	-0.5	+0.2	enable the tr
	Non-GHG emissions	-0.2 🗰	-0.1	+0.1	renewable
	Scarce natural resources	-0.0 (	-0.0	+0.0	Tenewable
	Biodiversity	-0.0 #	-0.0	+0.0	visible in the
	Waste	-0.2	-0.2	+0.0	environment
	Upright model <b>master</b> version on 6th Jun. 2021 at 19:34 GMT+0	+)	25%	Net impact ratio Value set: Equal weights	

ABB's products also enable the transition to **renewable** energy - this is visible in the positive environmental impacts

#### **COMPANY PROFILE: AFRY**

Consulting companies such as AFRY use scarce human capital to produce new knowledge, while inheriting some impact from their clients' operations

	IMPACI	NEGATIVE	SCORE	POSITIVE
⊕	Society	-0.2	+3.5	+3.
	Jobs		+1.4	+1.4
	Taxes		+1.5 +0.7	+1.5
	Societal infrastructure			+0.7
	Societal stability	-0.2 📟	-0.1	• +0.1
	Equality & human rights	-0.0	+0.0	+0.0
	Knowledge	-1.9	+0.8	+2.7
	Knowledge infrastructure		+0.2	+0.2
	Creating knowledge		+2.2	+2.2
	Distributing knowledge	-0.0	+0.3	+0.3
	Scarce human capital	-1.9	-1.9	
Q	Health	-0.4	-0.1	+0.3
	Physical diseases	-0.1 🔳	-0.1	+0.1
	Mental diseases	-0.0	-0.0	+0.0
	Nutrition	-0.0	+0.0	+0.0
	Relationships	-0.1 🖷	-0.0	+0.1
	Meaning & joy	-0.1 🖷	-0.0	• +0.1
4	Environment	-1.3	-0.7	+0.5
	GHG emissions	-0.6	-0.3	+0.3
	Non-GHG emissions	-0.2 📟	-0.0	+0.2
	Scarce natural resources	-0.1 •	-0.1	+0.0
	Biodiversity	-0.1 📼	-0.1	+0.0
	Waste	-0.2 🗰	-0.2	• +0.1
	Upright model master version		100/	Net impact ratio

AFRY provides its consultancy services to various sectors - **renewable** energy, **environmental** services and life sciences being the most positive ones.



#### **COMPANY PROFILE: PROCESS GENIUS**

Many of the software companies included in the SuMa program use significant amount of scarce human capital compared to revenue - this impact is expected to reduce as the companies grow

	IMPACT		NEGATIVE	SCORE	POSITIVE		
⊕	Society		-0.0	+5.0		+5.1	
	Jobs			+3.2	+3.2		
	Taxes			+1.7	+1.7		
	Societal infrastructure			+0.1	• +0.1		
	Societal stability		-0.0	-0.0	+0.0		
	Equality & human rights		-0.0	-0.0	+0.0		The digital twin software
П	Knowledge	-5.6		-3.0	+2.6		offered by Process Genius
_	Knowledge infrastructure			+1.1	+1.1		
	Creating knowledge			+1.2	+1.2		— builds a digital duplicate
	Distributing knowledge		-0.0	+0.3	+0.3		of the physical world
	Scarce human capital	-5.6		-5.6			which serves as
Ø	Health		-0.2	+0.2	+0.5		infrastructure for creating
	Physical diseases		-0.1 .	-0.0	• +0.1		now knowledge
	Mental diseases		-0.0	-0.0	+0.0		new knowledge.
	Nutrition		-0.1 •	+0.1	+0.2		
	Relationships		-0.0	+0.0	+0.0		
	Meaning & joy		-0.0	+0.1	• +0.1		
Ą	Environment		-1.2	-1.0	+0.2		
	GHG emissions		-0.6	-0.5	+0.2		
	Non-GHG emissions		-0.1 •	-0.1	+0.0		
	Scarce natural resources		-0.1 🖷	-0.1	+0.0		
	Biodiversity		-0.1 0	-0.1	+0.0		
	Waste		-0.2 📟	-0.2	+0.0		
	Upright model <b>master</b> version on 7th Jun. 2021 at 14:57 GMT+0		+	16%	Net impact ratio Value set: Equal weights		

## HOW DO THE RESULTS COMPARE TO THOSE OF OTHER COMPANY GROUPS?

#### THE SUMA COMPANIES PERFORM WELL COMPARED TO LARGER NORDIC PEERS

Comparing the program companies to companies listed on the Nasdaq Helsinki and the 200 largest companies in the Nordics





#### **ESG-STATUS DOES LITTLE TO ALTER THE CONCLUSIONS**

Comparison between the SuMa program companies and ESG funds



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# **4. DISCUSSION: WHAT IS THE SO-WHAT?**

# **SUMMARY: KEY RESULTS**

#### THE COMPANIES WITHIN THE SUSTAINABLE MANUFACTURING PROGRAM PERFORM WELL IN TERMS OF NET IMPACT, WITH SOME ROOM FOR DEVELOPMENT

- 1. **The Sustainable Manufacturing program companies are net positive**. The vast majority of program companies are net positive. When analysed all together, the companies generate positive societal and knowledge impacts with a very limited use of environmental resources. While the use of scarce human capital is large at the moment, this a natural feature of high tech companies and should not be aimed to be altered as such.
- 2. **Compared to Nordic peer groups, the program companies stand out positively**. The SuMa companies perform well in terms of net impact compared to Nasdaq Helsinki companies and other large Nordic peers. This implies that the program contains a selection of the more impactful manufacturing and industrial companies in Finland.
- 3. At this stage however, the impact of SuMa companies is comparable to that of its specially selected comparison group. The net impact profiles of the SuMa companies and the comparison group are relatively similar as expected. The main differences stem from the industries served and the inherited downstream impacts. The similar profiles are a good starting point for following the development of net impact over the coming years.



# PUTTING THE RESULTS INTO USE

#### THE SUSTAINABLE MANUFACTURING PROGRAM CAN UTILIZE THE RESULTS TO HELP BOOST COMPANIES TOWARDS HIGHER EFFICIENCY, PRODUCTIVITY & ENVIRONMENTAL FRIENDLINESS

- 1. The net impact analysis shows there is likely **unrealised potential** within positive environmental impacts. How can Business Finland most effectively bring together collaborations that can create innovation that help save environmental resources?
- 2. For many of the companies in the program, a large share of the impact profile is defined by the **industries served**. Can Business Finland support these companies in the development of solutions for net positive use cases?
- **3.** Investors, clients, and potential recruits are increasingly demanding that companies communicate openly about their net impact, and are more willing to give their time and money to the companies that pursue net positive business models. Given this, and the fact that many of the SuMa companies are already very net positive could Business Finland help provide these companies with the tools to utilize net impact as a **strategic positioning** in communications?
- 4. The analysis completed here is a starting point. As that the results are going to be followed over time, could they be used to open dialogues with the companies and **set net impact targets** for the coming years?
- 5. The systematic quantification and tracking of impact sets the Sustainable Manufacturing program and the companies apart as forerunners in impactful business. Could this fact be highlighted in communications to help **attract foreign talent** and **companies** to Finland as well as promote **national and international manufacturing innovation**?

##