



SO SMART

Socially sustainable manufacturing for the Factories of the Future

Project

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Participant no.	Participant organisation name	Short name	Country
1 (Coordinator)	Chalmers University of Technology	CHALMERS	SE
2	FESTO	FESTO	DE
3	Laboratory for Manufacturing Systems and Automation	LMS	GR
4	Fondazione Politecnico di Milano	POLIMI	IT
5	Deep White	DEEP	DE
6	Tampere University of Technology	TUT	FI

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EXECUTIVE SUMMARY

Manufacturing defined as the transformation of materials and information into goods for the satisfaction of human needs, is one of the primary wealth-generating activities for any nation and contributes significantly to employment (Chryssolouris, 2006). Furthermore, in past decades, institutions in general are increasingly interested and involved in defining sustainability and social responsibility. In addition, social and political pressures have led to the creation of new regulations and policies that support new business opportunities around global sustainability (Lanz et al., 2014). Taking these into account, the primary objective of the SO SMART Deliverable D1.2 “Report on key indicators of social sustainability” is to provide a comprehensive set of indicators and main dimensions, which will be exploited within the context of the SO SMART project, in order to approach and investigate the concept of social sustainability for the factories of the future.

Within this context, this document provides a comprehensive, long-list of indicators related to manufacturing which will be further examined for their relation with social and economic sustainability. This long-list of indicators is included in the current document; additionally, for complementarity purposes, the link to an online sheet with the most updated version of the list is also provided, in case further enhancements are made to this list during the later stages of the project. Furthermore, this long-list also provided directions towards selecting eleven (11) main dimensions of social sustainability. The dimensions aim to describe the space of social sustainability, while the indicators aim to make this more comprehensible. In general, it is expected that the indicators may be used to investigate which dimensions are met in terms of social sustainability. These main dimensions are expected to be further studied and be refined in the next phases of the project and to drive –together with additional available results- the future developments of SO SMART.

Identified relations of specific indicators from the provided long-list with the main dimensions of social sustainability have also been indicated. In order to conclude the examination of these dimensions and to indicate their measurability, a preliminary approach on how to evaluate these dimensions in terms of efficient social sustainability practice has also been reported. Furthermore, the beneficiary groups of social sustainability, which are expected to be further studied within the context of SO SMART, are identified and defined in this document. These beneficiary groups have been selected by considering clarity and smooth assimilation, while indicative relations with social sustainability indicators have also been established.

Concluding, it is noted that the current work has already been exploited in Task 1.3, where – among others- effort has been given to provide a more detailed analysis of the relations between the indicators and metrics specified in the current document. Further to this examination and its results, it is accordingly expected that the information provided in the current document may also be efficiently exploited to the next stages of the project as well.

1 INTRODUCTION

1.1 Scope of Document

Manufacturing defined as the transformation of materials and information into goods for the satisfaction of human needs, is one of the primary wealth-generating activities for any nation and contributes significantly to employment (Chrystolouris, 2006). Furthermore, in past decades, institutions in general are increasingly interested and involved in defining sustainability and social responsibility. In addition, social and political pressures have led to the creation of new regulations and policies that support new business opportunities around global sustainability (Lanz et al., 2014). Taking these into account, the primary objective of the SO SMART Deliverable D1.2 “Report on key indicators of social sustainability” is to provide a comprehensive set of indicators and main dimensions, which will be exploited within the context of the SO SMART project, in order to approach and investigate the concept of social sustainability for the factories of the future. The main dimensions of social sustainability which are presented in this report are also expected to enhance a shared understanding of social sustainability and its related perspectives between the various stakeholders. Accordingly, the current work aims to identify the main beneficiary groups of social sustainability in a clear and concise way. Additionally, this document also tries to verify that social sustainability is measurable and quantifiable by providing a preliminary correlation of the social sustainability dimensions with selected indicators. Finally, Deliverable D1.2 “Report on key indicators of social sustainability” aims to provide the required background work and the means, such as the long-list of social sustainability indicators, for the next Work Packages and Tasks of the SO SMART project.

1.2 Identified connection to other Work Packages and Tasks

Complementarily, this document aims to provide input to the next Work Packages and Tasks which run in parallel or during the later phases of the SO SMART project. A collective long-list of indicators which are potentially related to manufacturing enterprises and their connection with social sustainability is provided in the current document. The long-list of indicators has already proved useful within the Task 1.3 “Assessment framework for current practices” and it is expected to be further investigated in next Work Packages as well. Additionally, the presented main dimensions of social sustainability are also expected to be considered in the next Work Packages –when, for example, examining the relation of socially sustainable manufacturing and corporate culture- and, among others, provide the necessary directions.

1.3 Structure

The current section, Section 1, provides the scope of the document and indicates its main results. Additionally, it discusses the connection of this work to the next SO SMART Work Packages and Tasks and finally presents the structure of the document. Section 2 provides an insight to the beneficiary groups which will be investigated in SO SMART and shortly justifies the selection and the specialities of each group in a clear and concise way. Section 3 presents the collection of a long list of indicators/metrics which are related to manufacturing enterprises and which could

potentially be examined in connection with the main dimensions of social sustainability. Section 4 introduces the main dimensions of social sustainability together with a first identification of their related indicators, complemented by a preliminary approach for quantifying these main dimensions. Finally, Section 5 provides a list with the main conclusions which came out from the performed work and the main directions for the next steps.

2 BENEFICIARY GROUPS

The SO SMART project aims to eventually highlight the benefits of social sustainability for all the involved stakeholders and indicate these benefits in a clear and precise way. Thus, a first step towards this was to identify the beneficiary groups which the project is expected to focus on. In SO SMART, a beneficiary group is viewed as a group of individuals or persons who receive benefits, profits, or advantages from social sustainability.

Among others, the purpose was also to indicate beneficiary groups which would be clear and easy to recognize and understand. However, even from the first steps of the related analysis it was clear that there was some overlapping between the various groups and in several cases it was not easy to separate and distinctly identify some groups. Nevertheless, after iterative examination and discussion, the consortium reached a conclusion about the SO SMART beneficiary groups. The following paragraphs provide insight on the process which was followed as well as on the results of this examination.

Initially, in order to identify the beneficiary groups of social sustainability, the SO SMART consortium began by examining the SO SMART Socially Sustainable Ecosystem, presented in the following figure. It is clearly perceived by this figure too, that an overlap between the three layered cases (Individual, Industry and Society) exists, even if the groups of these levels may have sometimes the same and sometimes different primary objectives.

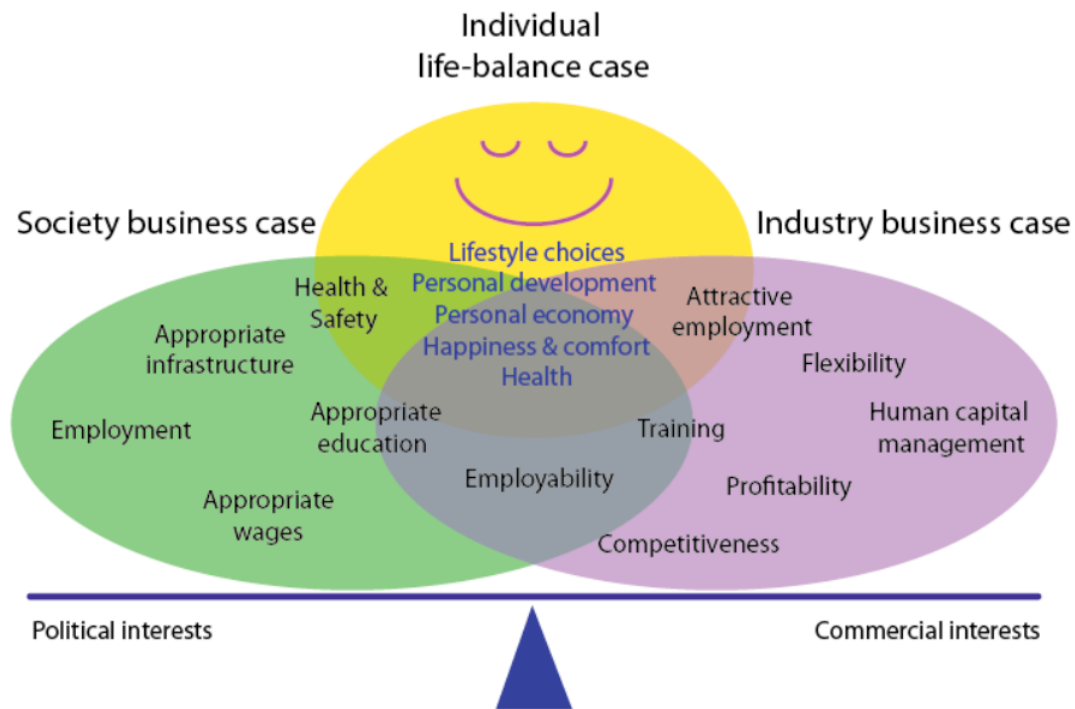


Figure 1: The SO SMART Socially Sustainable Ecosystem.

For example, based on this Figure, we may identify the following groups:

- **Individuals.** This is mainly comprised of employees, potential employees, ex-employees, etc. Their points of interest related to social sustainability can be lifestyle choices, personal development, job security, health, etc.
- **Society.** This is mainly comprised of people who are in a relationship to the social sustainability of a factory in a broader sense. For example, they could be the family members of the employee of the factory or people living near where a factory is located. They receive benefits, profits, or advantages from a factory which practices good social sustainability. Their points of interest have to do with better infrastructure, high employment-rate, social stability, environment, etc.
- **Industry.** This is mainly comprised of the company shareholders and/or the individuals acting as managers. Their points of interest could be profitability, competitiveness, productivity, human capital, etc.

Nevertheless, when further examining the different beneficiary groups in each case, several different groups may be identified such as:

Employees, potential employees, job applicants, managers, directors, families of employees, neighbours, service providers, citizens, local suppliers, local authorities, local consultants, local manufacturing sub-contractors, local educators, researchers, local training providers, trainees, technology providers, manufacturing company, society, communities, factory, municipality, and several more....

Looking into these groups, the SO SMART consortium considered that the same examined actor could be part of different groups. For example, an employee is also a citizen and/or a neighbour and/or a trainee and/or maybe can be included in even more. Furthermore, even more important to note is that several of the identified groups may co-benefit from the realization of social sustainability concepts, towards employment, economic growth, education, health and environmental aspects. In order to discretely examine the expected benefits of the three layers (individual, society, industry) and in accordance to the work done in parallel in this task in order to identify the social sustainability dimensions and indicators (as described in Section 3), the consortium decided to focus on the following three beneficiary groups: **Factory, Employee and Society**. As aforementioned, the selection of these groups also considered clarity and understandability of the finally proposed beneficiary groups. The same rule was applied for the definition/description of these entities. Therefore, the SO SMART consortium will focus on:

- **Factory**, as the group of shareholders/managers of a manufacturing plant in an area;
- **Employee**, as the group of employees in such a factory; and
- **Society**, as the large community in the same local area.

It is considered that the clarity of these three main beneficiary groups will enable the identification of their correlations between them but also in relation with the social sustainability dimensions (as described in Section 3). Furthermore, the specification of these main beneficiary groups is expected to facilitate the analysis, in the later stages of the project, regarding economic profitability through social sustainability, as well as guide the recommendations for socially sustainable manufacturing and corporate culture among others.

Within the SO SMART Task 1.2, a preliminary analysis regarding the main correlations of the factory and employee beneficiary groups with social sustainability dimensions, also took place

while researching for the dimensions and indicators of social sustainability. Indicative correlations that were identified in this preliminary analysis are provided in the long list of indicators in Section 2. Nevertheless, these correlations are expected to be finalized and verified during the coming phases of the project in parallel with the next developments which will facilitate the exploration of such correlations.

3 PERFORMANCE METRICS AND KPIS

In order to progressively approximate the main dimensions of social sustainability, the SO SMART consortium first identified and collected a set of indicators/metrics used in various aspects of manufacturing, in order to be examined as potentially relevant –directly or indirectly– with social sustainability. The search for these indicators considered economic perspective, environmental issues, technical and productivity aspects and several more. The long list of indicators which was produced was then classified according to the GRI4 (2013) and other scientific sources into the categories presented in the following table:

Table 1: Classification of Indicators

Classes	Subclasses
Economics	Economic performance, market presence, Indirect economic impacts, procurement practices, employment
Labor	Employment, labor/management relations, occupational health and safety, training and education, diversity and equal opportunity, equal remunerations for women and men, supplier assessment for labor practices, labor practices grievance mechanisms
Human rights	Investments, freedom of association and collective bargaining, child labor, forced or compulsory labor, security practices, indigenous rights, assessment, supplier human rights assessment, human rights grievance mechanisms
Social	Anti-corruption, public policy, anti-competitive behavior, compliance, supplier assessment for impacts on society, Individual career, worker wellbeing
Product Responsibility	Customer health and safety, products and service labeling, marketing communications, customer privacy, compliance
Environment	Material, water, biodiversity, emissions, effluents and waste, products and services, compliance, transport, overall, supplier environmental assessment, environmental grievance assessment, energy
Technical	Process flow metrics, quality metrics, financial metrics, productivity metrics, economic)

Furthermore, the metrics and indicators were classified into three categories based on their potential impact and relation with the three beneficiary groups: Factory, Employee and Society. After this classification, the metrics measurability was evaluated and classified into three categories: 1- quantitative (measurable unit), 2-computable (rates, ratios and formula-based) and 3-qualitative. Finally, the long-list of indicators which are potentially relevant to social and economic sustainability was created and it is provided in the table below. The table is complemented by additional columns with more information related to these indicators.

As a next step, these indicators were evaluated according to their relevance to SO SMART social sustainability aspects, as described in Section 4.

The table with the long-list of indicators is expected to be updated during the course of the project. The latest version of the following table is available online, by following this link:

https://docs.google.com/spreadsheets/cc?key=0AgyZdp7Vd6tedGpNVGpUYWZrQTNMdGRxUUZuTm4tLVE&usp=drive_web#gid=0

The online version also includes the sources of these indicators and corresponding references. Furthermore, the online version of the table includes additional columns with supplementary information about the collected indicators.

Table 2: Long-list of Collected Indicators

Class	Subclass	ID	Parameters	Short Description	Related Beneficiary Groups (indicatively)	Measurability 3-qualitative 2-rate, ratio, calculable 1-quantitative, parameters	Source
Economics	Economic performance	EC1	cost	Direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments.	factory, society	2	GRI4
Economics	Economic performance	EC2	cost	Financial implications and other risks and opportunities for the organization's activities due to climate change.	society	3	GRI4
Economics	Economic performance	EC3	cost	Coverage of the organization's defined benefit plan obligations.	factory	3	GRI4
Economics	Economic performance	EC4	grant	Financial assistance received from government.	factory	2	GRI4
Economics	Market presence	EC5	cost	Ratios of standard entry level wage compared to local minimum wage at significant locations of operation.	factory	2	GRI4
Economics	Market presence	EC6	percentage	Proportion of senior management hired from the local community and significant locations of operation	society	2	GRI4

Economics	Indirect economic impacts	EC7	cost	Development and impact of infrastructure investments and services supported	society	3	GRI4
Economics	Indirect economic impacts	EC8	cost	Significant indirect economic impacts, including the extent of impacts	society	2	GRI4
Economics	Procurement Practices	EC9	percentage	Proportion of spending on local suppliers at significant locations of operations	society	2	GRI4
Labor	Employment	LA1	pcs, rate	Total number and rates of new employee hires and employee turnover by age group, gender and region	factory, society	2	GRI4
Labor	Employment	LA2		Benefits provided to full-time employees that are not provided to temporary, rented or part-time employees, by major operations.	employee, factory	3	GRI4
Labor	Employment	LA3	percentage	Return to work and retention rates after parental leave by gender	factory	2	GRI4
Labor	Labor/Management Relations	LA4	days	Minimum notice periods regarding operational changes, including whether these are specified in collective agreements	employee, factory	2	GRI4
Labor	Occupational Health and Safety	LA5	percentage	Percentage of total workforce represented in formal joint management - worker health and safety committees that help monitor and advise on occupational health and safety programs	employee, factory	2	GRI4
	Occupational Health and Safety	LA6	percentage	Type of injury and rates of injury, occupational diseases, lost days, and absenteeism, and total number of work-related fatalities by region and by gender	factory, employees	2	GRI4
Labor	Occupational Health and Safety	LA7		Workers with high incidence or high risk of diseases related to their occupation	employee	3	GRI4
Labor	Occupational Health and Safety	LA8		Health and safety topics covered in formal agreements with trade unions	factory	3	GRI4
Labor	Training and Education	LA9	hours, days	Average hours of training per year per employee by gender, and by employee category	employee, factory	2	GRI4
Labor	Training and Education	LA10	number	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings.	employees	1	GRI4

Labor	Training and Education	LA11	percentage	Percentage of employees receiving regular performance and career development reviews by gender and by employee category	employee	2	GRI4
Labor	Diversity and Equal Opportunity	LA12		Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity	factory	3	GRI4
Labor	Equal Remuneration for Women and Men	LA13	percentage	Ratio of basic salary and remuneration of men to women by employee category, by significant locations of operation	employee	2	GRI4
Labor	Supplier Assessment for labor practices	LA14	percentage	Percentage of new suppliers that were screened using labor practices criteria	society	2	GRI4
Labor	Supplier Assessment for labor practices	LA15		Significant actual and potential negative impacts for labor practices in the supply chain and actions taken	society	3	GRI4
Labor	Labor Practices Grievance Mechanisms	LA16	pcs	Number of grievances about labor practices filed addressed, and resolved through formal grievance mechanisms	factory	1	GRI4
Human Rights	Investments	HR1	percentage	Total percentage and number of significant investment agreements that include human rights clauses or that have undergone human rights screening.	society	2	GRI4
Human Rights	Investments	HR2	hours	Total hours of employee training on human rights policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained.	employee, factory	1	GRI4
Human Rights	Investments	HR3	pcs	Total number of incidents of discrimination and corrective actions taken	factory, society	1	GRI4
Human Rights	Freedom of Association and collective Bargaining	HR4		Operations and suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and measures taken to support these rights	factory, society	3	GRI4

Human Rights	Child labor	HR5		Operations and suppliers identified as having significant risk for incidents of child labor, and measures taken to contribute to the effective abolition of child labor	factory, society	3	GRI4
Human Rights	Forced or compulsory labor	HR6		Operations and suppliers identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of all forms of forced or compulsory labor	factory, society	3	GRI4
Human Rights	security practices	HR7	percentage	Percentage of security personnel trained in the organization's human rights policies or procedures that are relevant to operations	employee, factory	2	GRI4
Human Rights	indigenous rights	HR8	pcs	Total number of incidents of violation involving rights of indigenous peoples and actions taken	factory, society	1	GRI4
Human Rights	assessment	HR9	pcs	Total number and percentage of operations that have been subject to human rights reviews or impact assessments	factory	1	GRI4
Human Rights	supplier human rights assessment	HR10	percentage	Percentage of new suppliers that were screened using human rights criteria	factory, society	2	GRI4
Human Rights	supplier human rights assessment	HR11		Significant actual and potential negative human rights impacts in the supply chain and actions taken	factory, society	3	GRI4
Human Rights	human rights grievance mechanisms	HR12	pcs	Number of grievances about human rights impacts filed, addressed and resolved through formal grievance mechanisms	factory, society	1	GRI4
Social	local communities	S01	percentage	Percentage of operations with implemented local community engagement, impact assessments and development programs	society	2	GRI4
Social	local communities	S02		Operations with significant actual and potential negative impacts on local communities	society	3	GRI4
Social	anti-corruption	S03	number	Total number and percentage of operations assessed for risks related to corruption and the significant risk identified	factory	1	GRI4
Social	anti-corruption	S04		Communication and training on anti-corruption policies and procedures	employee	3	GRI4

Social	anti-corruption	S05	number	Confirmed incidents of corruptions by country and recipient/beneficiary	society	1	GRI4
Social	Public policy	S06		Total value of political contributions by country and recipient/beneficiary	society	3	GRI4
Social	anti-competitive behaviour	S07	number	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes	society	1	GRI4
Social	compliance	S08	cost	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	factory, society	2	GRI4
Social	supplier assessment for impacts on society	S09	percentage	Percentage of new suppliers that were screened using criteria for impacts on society	society	2	GRI4
Social	supplier assessment for impacts on society	S010		Significant actual and potential impacts on society in the supply chain and actions taken	society	3	GRI4
Social	grievance mechanisms for impacts on society	S011	number	Number of grievances about society filed, addressed and resolved through formal grievance mechanisms	society	1	GRI4
Social	Commitment	S012		Commitment to take action in support of social sustainability	factory	3	
Social	Individual career	S045	years	Tenure length	employee, factory	1	
Social	Individual career	S046		Learning rate	employee	3	
Social	Individual career	S047	years	Job-related experience in years	employee	1	
Social	Individual career	S048	cost	Training costs	factory	1	
Social	Worker wellbeing	S049		Feel-of-control (sense of responsibility)	employee	3	

Social	Worker wellbeing	S050		Self-confidence	employee	3	
Social	Worker wellbeing	S051		Self-efficiency	employee	3	
Social	Worker wellbeing	S052		Job motivation	employee	3	
Social	Worker wellbeing	S053		Job satisfaction	employee	3	
Social	Individual career	S054		Task-related skills	employee	3	
Social	Individual career	S055		Professional knowledge and experience	employee	3	
Social	Collaboration	S056		Cooperation skills	employee	3	
Product Responsibility	customer health and safety	PR1	percentage	Percentage of significant product and service categories for which health and safety impacts are assessed for improvement	factory	2	GRI4
Product Responsibility	customer health and safety	PR2	number	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcomes.	factory	1	GRI4
Product Responsibility	products and service labeling	PR3		Type of product and service information required by the organization's procedures for product and service information and labeling, and percentage of significant product and service categories subject to such information requirements	factory	3	GRI4
Product Responsibility	products and service labeling	PR4		Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship. Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes.	factory	3	GRI4

Product Responsibility	products and service labeling	PR5		results of surveys measuring customer satisfactions	factory	3	GRI4
Product Responsibility	marketing communications	PR6		Sale of banned or disputed products	factory	3	GRI4
Product Responsibility	marketing communications	PR7	number	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship by type of outcomes	factory	1	GRI4
Product Responsibility	customer privacy	PR8	number	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	factory, society	1	GRI4
Product Responsibility	compliance	PR9	cost	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services	factory	2	GRI4
Environment	material	EN1	weight	Materials used by weight or volume	factory	1	GRI4
Environment	material	EN2	percentage	Percentage of materials used that are recycled input materials	factory	2	GRI4
Environment	material	EN3	kWh	Energy consumption within the organization	factory	1	GRI4
Environment	material	EN4	kWh	Energy consumption outside of the organization (including carbon footprint)	factory	2	GRI4
Environment	material	EN5	rate	Energy intensity	factory	3	GRI4
Environment	material	EN6	percentage	Reduction of Energy consumption	factory	2	GRI4
Environment	material	EN7		Reduction in Energy requirements of products and services	factory	3	GRI4
Environment	water	EN8	l	Total water withdrawal by source	factory	2	GRI4
Environment	water	EN9		Water sources significantly affected by withdrawal of water	society	3	GRI4

Environment	water	EN10	percentage	Percentage and total volume of water recycled and reused	factory	2	GRI4
Environment	biodiversity	EN11		Operational sites owned, leased, managed in or adjacent to protected areas and areas of high biodiversity value outside protected areas	factory	3	GRI4
Environment	biodiversity	EN12		Description of significant impact of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	factory	3	GRI4
Environment	biodiversity	EN13		Habitats protected or restored	society	3	GRI4
Environment	biodiversity	EN14	number	Total number of iucn red list species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	society	1	GRI4
Environment	emissions	EN15	weight	Direct greenhouse gas emissions(scope 1)	factory	2	GRI4
Environment	emissions	EN16	weight	Energy indirect greenhouse gas (GHG) emissions (scope 2)	factory	2	GRI4
Environment	emissions	EN17	weight	Other indirect greenhouse gas (GHG) emissions (scope3)	factory	2	GRI4
Environment	emissions	EN18		Greenhouse gas (GHG) emissions intensity	factory, society	3	GRI4
Environment	emissions	EN19		Reduction of greenhouse gas (GHG) emissions	factory	3	GRI4
Environment	emissions	EN20		Emissions of ozone-depleting substances (ODS)	factory, society	2	GRI4
Environment	emissions	EN21		NOx, SOx, and other significant air emissions	factory	2	GRI4
Environment	effluents and waste	EN22		Total water discharge by quality and destination	society	3	GRI4
Environment	effluents and waste	EN23		Total weight of waste by type and disposal method	factory	2	GRI4
Environment	effluents and waste	EN24	number	Total number and volume of significant spills	factory	1	GRI4

Environment	effluents and waste	EN25	weight	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel convention	factory	1	GRI4
Environment	effluents and waste	EN26		Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the organization's discharges of water and runoff	factory	3	GRI4
Environment	products and services	EN27		Extended impact mitigation of environmental impact of products and services	factory	3	GRI4
Environment	products and services	EN28	percentage	Percentage of product sold and their packaging material that are reclaimed by category	factory	2	GRI4
Environment	compliance	EN29	cost	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	factory	2	GRI4
Environment	transport	EN30		Significant environmental impacts of transporting products and other goods and materials for the organization's operations, and transporting members of the workforce	factory	3	GRI4
Environment	overall	EN31		Total environmental protection expenditures and investments by type	factory	3	GRI4
Environment	supplier environmental assessment	EN32	percentage	Percentage of new suppliers that were screened using environmental criteria	factory	2	GRI4
Environment	supplier environmental assessment	EN33		Significant actual and potential negative environmental impacts in the supply chain and actions taken	factory	3	GRI4
Environment	environmental grievance assessment	EN34	number	Number of grievances about environmental impacts filed, addresses and resolved through formal grievance mechanisms	factory	1	GRI4
Environment	Energy	EN35	kWh	Energy Consumption	factory	1	
Environment	Energy	EN36	cost	Energy Cost	factory	1	
Environment	Energy	EN37	percentage	Energy Efficiency	factory	2	

Environment	Energy	EN38	kW	Power	factory	1	
Environment	Energy	EN39	kWh	Energy Loss	factory	2	
Technical	Process flow metrics	TE1	minutes, hours	Cycle time: Time it takes to perform one cycle of operation from start to finish. The operation may be the full order-delivery cycle or a single process operation. It should include the waiting steps that are part of the process.	factory	1	Fujimoto, Velaction, etc.
Technical	Process flow metrics	TE2	hours	Order-2-Delivery Lead time (customer orders and receives)	factory	1	Fujimoto, Liker, etc.
Technical	Process flow metrics	TE3	hours	Total manufacturing lead time: Total time from order of raw material to shipping of the final product (company perspective)	factory	1	S.Torvinen
Technical	Process flow metrics	TE4	minutes, hours	Production lead time (Throughput time): from start of manufacturing to final product (including testing)	factory	1	
Technical	Process flow metrics	TE5	jobs/hour	Takt time: constant product output per time unit	factory	2	
Technical	Process flow metrics	TE6	jobs/time unit	Throughput rate: Amount of jobs done in time unit	factory	2	ISO 22400
Technical	Process flow metrics	TE7	percentage	Line efficiency: Ratio of actual process throughput to the theoretical ideal throughput based on the pace and cycle time at the bottleneck station (realized versus planned)	factory	2	Mejabi
Technical	Process flow metrics	TE8	hours	Value added time	factory	1	Liker
Technical	Process flow metrics	TE9	percentage	Ratio of value added processing time to total manufacturing lead time (flow efficiency)	factory	2	Mejabi, Modig & Åhlström

Technical	Process flow metrics	TE10	percentage	Allocation ratio: Relationship of the complete actual busy time over all work units (AUBT) involved in a production order to the actual order execution time of a production order (AOET). Allocation ratio is an index for the wait times and delay times. It shows how much of the throughput time of a production order is caused by actual processing. (busy time includes necessary machine set-ups and handling)	factory	2	ISO 22400
Technical	Process flow metrics	TE11	percentage	Material handling time ratio : Ratio of material handling time to total manufacturing lead time	factory	2	Mejabi
Technical	Process flow metrics	TE12	percentage	Setup time ratio: Ratio of setup time to total manufacturing lead time (from product point of view)	factory	2	Mejabi
Technical	Process flow metrics	TE13	percentage	Setup ratio: Ratio of actual unit setup time (AUST) to actual unit processing time (AUPT). It defines the percentage time used for setup compared to the actual time used for processing (set-up + processing). Indicates the relative loss of value adding opportunity for the work unit. (from machine point-of-view)	factory	2	ISO 22400
Technical	Process flow metrics	TE14	percentage	Equipment & personnel waiting time ratio: Ratio of equipment and personnel queuing and waiting time to total manufacturing lead time	factory	2	Mejabi
Technical	Process flow metrics	TE15	percentage	Materials waiting time ratio: Ratio of waiting time for materials to total manufacturing lead time	factory	2	Mejabi
Technical	Process flow metrics	TE16	percentage	Information waiting time ratio: Ratio of waiting time for information to total manufacturing lead time	factory	2	Mejabi
Technical	Process flow metrics	TE17	percentage	Scrap rate: Percentage of units starting as raw material that are lost as scrap from all steps in the process	factory	2	Mejabi, ISO 22400
Technical	Process flow metrics	TE18	percentage	Rework rate: Percentage of units starting as raw material that have to be reworked at least once in the process	factory	2	Mejabi, ISO 22400

Technical	Process flow metrics	TE19	percentage	Fall off ratio: Considers the fall off quantity for a specific production operation in relation to the produced quantity in the first operation (PQ). The fall of quantity is calculated as the produced quantity (PQ) on the first production order sequence minus the good quantity (GQ) on the current production order sequence. Typically used in concatenated processes, where a product is produced in the first manufacturing step, but may have scrap in the further operations.	factory	2	ISO 22400
Technical	Quality metrics	TE20	percentage	Quality ratio: Relationship between the good quantity (GQ) and the produced quantity	factory	2	ISO 22400
Technical	Quality metrics	TE21	percentage	Customer reject ratio = rejects/all goods	factory	2	Meyer, Heiko
Technical	Quality metrics	TE22	percentage	Failure quota (ratio= failed goods/ all goods)	factory	2	Meyer, Heiko
Technical	Quality metrics	TE23		Manufacturing quality (internal quality and performance)	factory	3	Fujimoto
Technical	Quality metrics	TE24		Conformance quality: Reliability, fit and finish (satisfied customer ratio)	factory	3	Fujimoto
Technical	Quality metrics	TE25	kg, pcs,	Scrap products	factory	1	Wang, John
Technical	Quality metrics	TE26	pcs	Number of external complaints	factory	1	Cottyn
Technical	Quality metrics	TE27	percentage	Machine scrap ratio = scrap/machine	factory	2	Hakki Ozgur Unver
Technical	Quality metrics	TE28	pcs	Defects (rework, repair or reprocessing is possible)	factory	1	Hakki Ozgur Unver
Technical	Quality metrics	TE29	percentage	Production process ratio: Relationship between the actual production time (APT) over all work units and work centres involved in a production order and the whole throughput time of a production order which is the actual order execution time (AOET). Production process ration is an index for the efficiency of the production.	factory	2	ISO 22400

Technical	Quality metrics	TE30	percentage	Actual to planned scrap ratio: Calculated as the scrap quantity (SQ) divided by the planned scrap quantity (PSQ). Indicates how much scrap was actually produced compared with the expected (planned) value. (Planned in ERP)	factory	2	ISO 22400
Technical	Quality metrics	TE31	percentage	First pass yield: Designates the percentage of products, which fulfill the quality requirements in the first process run without reworks (good parts). It is expressed as the ratio between good parts (GP) and inspected parts (IP)	factory	2	ISO 22400
Technical	Quality metrics	TE32	currency	Total manufacturing cost per unit excluding materials	factory	2	MESA report
Technical	Quality metrics	TE33	cost/time	Cost of machine time	factory	2	
Technical	Quality metrics	TE34		Cost per part: Total cost per unit for raw materials, processing and indirect overhead	factory	2	Mejabi
Technical	Quality metrics	TE35	hours, days	Inventory time for raw material	factory	1	Mejabi, Fujimoto
Technical	Quality metrics	TE36	cost	Suppliers quality (incoming)	factory	2	
Technical	Quality metrics	TE37	cost	Warranty cost	factory	2	
Technical	Financial metrics	TE38	percentage	Inventory levels: Inventory level of raw materials, work in process and finished goods	factory	1	Mejabi
Technical	Financial metrics	TE39	hours, days	inventory time for finished goods	factory	1	
Technical	Financial metrics	TE40	hours, days	inventory time for WIP	factory	1	
Technical	Financial metrics	TE41	currency	Inventory cost for raw material	factory	2	
Technical	Financial metrics	TE42	currency	Inventory cost for finished goods	factory	2	Meyer, Heiko
Technical	Financial metrics	TE43	currency	inventory cost for WIP	factory	2	

Technical	Financial metrics	TE44	hours, days	Inventory time: Number of "days of inventory" in the value stream	factory	1	Wang, John, Meyer, Heiko
Technical	Financial metrics	TE45	number	Inventory turnover: Defined as the ratio of the throughput (TH) to average inventory. It is commonly used to measure the efficiency of inventory and represents the average number of times the inventory stock is replenished or turned over. 4 types of inventories: Raw materials, Consumables, Finished good inventory, WIP inventory	factory	1	ISO 22400, Liker
Technical	Financial metrics	TE46	pcs	Finished goods inventory per type	factory	1	Liker
Technical	Financial metrics	TE47	pcs	Work in Progress	factory	1	Liker
Technical	Financial metrics	TE48	percentage	Overtime ratio	factory	2	Cottyn
Technical	Financial metrics	TE49	kgs, pcs	Material consumed (total raw material)	factory	1	Cottyn
Technical	Financial metrics	TE50	rate	Comprehensive energy consumption: Ratio between all the energy consumed in a production cycle and the produced quantity (PQ)	factory	2	ISO 22400
Technical	Financial metrics	TE51	cost	Profitability. Return on investment	factory	2	
Technical	Financial metrics	TE52	ratio	Productivity: added value/input, Sales currency per person, output/input, pieces/labor-hour	factory	2	Wang, John, Liker
Technical	Financial metrics	TE53	ratio	Labor productivity: Ratio of monthly product value shipped to monthly labor expenditures, man-hours/product	factory	2	Mejabi, Fujimoto
Technical	Financial metrics	TE54	ratio	Machine productivity: added value/time unit, pieces per machine hour	factory	2	Fujimoto
Technical	Productivity metrics	TE55	ratio	Capital productivity: Ratio of monthly product value shipped to monthly capital charges (for tools, equipment and facilities) depreciation and direct expenditures	factory	2	Mejabi

Technical	Productivity metrics	TE56	ratio	Setup intensity: Ratio of setup time to scheduled plant operating time	factory	2	Mejabi
Technical	Productivity metrics	TE57	ratio	Efficiency of employee, output ratio in time unit (actual versus planned output)	employee	2	Cottyn
Technical	Productivity metrics	TE58	ratio	Worker efficiency: Considers the relationship between the actual personnel work time (APWT) related to production orders and the actual personnel attendance time (APAT) of the employee	employee	2	ISO22400
Technical	Productivity metrics	TE59	ratio	Efficiency of work unit, output ratio in time unit (actual versus planned output)	factory	2	Cottyn
Technical	Productivity metrics	TE60	ratio	Technical efficiency: Relationship between the actual production time (APT, only value added time) and the sum of the actual production time (APT) and the actual unit delay time (ADET) which includes the delays and malfunction-caused interruptions.	factory	2	ISO 22400
Technical	Productivity metrics	TE61	ratio	Allocation efficiency: Ratio between the actual allocation time of a work unit expressed as the actual unit busy time (AUBT) and the planned time for allocating the work unit expressed as the planned unit busy time (PBT). Indicates how strongly the planned capacity of the work unit is already used and how much planned capacity is still available.	factory	2	ISO 22400
Technical	Productivity metrics	TE62	ratio	Utilization efficiency: Ratio between the actual production time (APT) and the actual unit busy time (AUBT). Identifies the productivity of work units.	factory	2	ISO 22400
Technical	Productivity metrics	TE63	hours, days	Production loss = actual production time (incl. Idle, reduced speed, quality errors) - standard processing time	factory	2	Hakki Ozgur Unver
Technical	Productivity metrics	TE64	percentage	Batch performance= planned batch processing time / actual batch processing time	factory	2	Hakki Ozgur Unver
Technical	Productivity metrics	TE65	minutes, hours	Set-up time: Amount of time needed for setting up the machine including change of tools, fixtures, programs etc.	factory	1	Hakki Ozgur Unver

Technical	Productivity metrics	TE66	minutes, hours	minor stoppage time (un-planned)	factory	1	
Technical	Productivity metrics	TE67	percentage	Reduced speed ratio (reduced-speed processing time/standard processing time)	factory	2	
Technical	Productivity metrics	TE68	minutes, hours, days	reduced speed processing time	factory	1	
Technical	Productivity metrics	TE69	minutes, hours	standard processing time	factory	1	
Technical	Productivity metrics	TE70	hours, shifts, days	Ramp-up time (time to produce first new product fulfilling the quality requirements)	factory	1	
Technical	Productivity metrics	TE71	index	Overall equipment effectiveness index: The availability of a work unit, the effectiveness/performance of the work unit and the quality ratio KPIs integrated into a single indicator.	factory	2	ISO 22400, Meyer, Heiko, Wang, John; Hakki Ozgur Unver
Technical	Productivity metrics	TE72	ratio	Availability: Ratio that shows the relation between the actual production time (APT) and the planned busy time (PBT) for a work unit. Indicates how strongly the capacity of a work unit for the production is used in relation to the available capacity. (sometimes called "degree of utilization" or "capacity factor")	factory	2	ISO 22400, Meyer, Heiko
Technical	Productivity metrics	TE73	percentage	Effectiveness/performance: Represents the relationship between the planned target cycle and the actual cycle expressed as the planned runtime per item (PRI) multiplied by the produced quantity (PQ) divided by the actual production time (APT).	factory	2	ISO 22400

Technical	Productivity metrics	TE74	hours, days	Changeover time. Amount of time between part A and part B. The time includes set-up time, loading, machining, unloading and quality analysis. (Time needed for change from good quality part A to good quality part B)	factory	1	Wang, John
Technical	Productivity metrics	TE75	hours, shifts, days	Breakdowns (connects to MTBF)	factory	1	Hakki Ozgur Unver
Technical	Productivity metrics	TE76	hours, days	Mean downtime (MDT) $MDT = MWT + MTTR$	factory	1	Hakki Ozgur Unver
Technical	Productivity metrics	TE77	hours, days	Mean time to failure (MTTF): Calculated as the mean of all times to failure measures (TTF) for a work unit for all failure instances (FE).	factory	1	ISO 22400
Technical	Productivity metrics	TE78	hours, days	Mean time to repair (MTTR): Average time that an item required to restore a failed component in a work unit. Calculated as the mean of all time to repair measures (TTR) for a work unit for all failure events (FE). TTR measures the time to repair, does not include waiting time.	factory	1	
Technical	Productivity metrics	TE79	hours, days	Mean time between Failures (MTBF).	factory	1	
Technical	Productivity metrics	TE80	hours, days	Mean Waiting Time (MWT) for repair	factory	1	
Technical	Productivity metrics	TE81	ratio	Corrective maintenance ratio: Considers the corrective maintenance time (CMT) in relation to the total maintenance expressed as the sum of corrective maintenance time (CMT) and planned maintenance time (PMT).	factory	2	ISO 22400
Technical	Productivity metrics	TE83	ratio	Machine Processing rate. Actual time machine is processing divided by planned operation time.	factory	2	
Technical	Productivity metrics	TE84	minutes, hours, days	Machine Processing time. Actual time machine is processing the part (does not include set-up times)	factory	1	
Technical	Productivity metrics	TE85	number	Number of tasks	human	1	

Technical	Productivity metrics	TE86	percentage	Resource Utilization Rate. Actual busy time divided by planned operation time.	factory	2	
Technical	Productivity metrics	TE87	minutes, hours, days	Delivery punctuality. Material, parts and products appear just in time.	factory	1	
Technical	Productivity metrics	TE88	percentage	Schedule attainment (adherence), that measures of what percentage of time a target level of production is attained within a specific schedule of time	factory	2	
Technical	Productivity metrics	TE89	index	Process flexibility: Width of product ranges that a manufacturing unit can handle (without long set-ups)	factory	3	
Technical	Productivity metrics	TE90	currency	Energy cost per unit	factory	2	
Technical	Productivity metrics	TE91	minutes, hours, days	Idle time	factory	1	Hakki Ozgur Unver

Sources:

In order to come up with the previous list, the information sources which are indicated in the references section were –among others– examined. As already noted, the latest updates on this list and related sources/references can be found in the online sheet.

4 DIMENSIONS OF SOCIAL SUSTAINABILITY INDICATORS

The main dimensions of social sustainability indicators as identified in the SO SMART project are presented in this chapter. From the beginning, the aim of the consortium was to come up with a list of main dimensions which would be capable of eventually evaluating the practice of social sustainability. The dimensions aim to describe the space of social sustainability, while the indicators aim to make this more comprehensible. In general, it is expected that the indicators could be used in an approach to investigate which dimensions are met in terms of social sustainability. Eventually, eleven (11) main dimensions of social sustainability indicators were qualified. The procedure followed in order to decide on these dimensions together with additional information is provided in the following paragraphs.

The long-list of indicators related to manufacturing, which are presented in Section 3, was initially studied. Taking into account, among others, the needs and expectation of the beneficiary groups, all the indicators were examined and they were evaluated according to their relevance with the social sustainability aspects examined in SO SMART. After this exercise, the identified most relevant indicators were classified accordingly to economical, ecological or social categories. The reason for the assortment of these indicators was also indicated for each qualified indicator. The following table provides an example on how a specific indicator was studied for relevance, classification and reason for assortment.

Table 3: Examination, Classification and Relevance of indicators

Category	ID	Parameters	Explanation	Beneficiary groups	Measurability 3 - qualitative 2 - rate, ratio, calculable 1 - quantitative, parameters	Relevance for SoSmart project and Social Sustainability 1 - relevant 2 - maybe 3 - not at all	Source	1 - Economical 2 - Ecological 3 - Social	Reason for assortment of management criteria as indicator
Market presence	EC5	cost	Ratios of standard entry level wage compared to local minimum wage at significant locations of operation.	company	2	1	GRI4	Social	employee's social hedging, equality, fair structuring, workers' rights and diversity, measurement, set goals for achievements

After the most related indicators were selected, the main dimensions of social sustainability could be decided. Therefore, according to our analysis, we arrived to a collection of dimensions which are considered valid at this stage of the SO SMART project. These can be found in column A “Dimensions of Social Sustainability Indicators” in the following table.

In Column B-“In Concrete Terms”, these dimensions are shortly explained, while in Column C-“Inventory of Social Sustainability-items verbalized” a preliminary approach for evaluating these dimensions is provided. In Column C, items to inquire the quantified level of each dimension in manufacturing companies -queried and analysed empirically- are verbalized. All items there can be answered on a scale including parameters from 1 (fully declined) to 5 (fully agreed). Therefore, this provides a first, preliminary approach for quantifying dimensions related to social sustainability within the SO SMART Project.

Furthermore, indicators related –from the factory perspective- to the identified main dimensions of social sustainability are indicated in Column D-“Related Indicators” of the following table. These relations have been further examined in T1.3/D1.3 and they are also expected to be used in the next work packages and tasks of the project.

A. Dimensions of Social Sustainability Indicators	B. In Concrete Terms	C. Inventory of Social Sustainability - items verbalized	D. Indicative Related Indicators
1. Commitment	<ul style="list-style-type: none"> - Commitment to take action in support of social sustainability - Fulfil a specific standard for documenting social sustainability activities - Fulfil a related programmatic act - Meet universal conditions of sustainability 	<ol style="list-style-type: none"> 1. Our Company has a clearly stated vision of social sustainability. 2. Our company is committed to a sustainable practice in all relevant areas of economy, ecology and social aspects. 3. Does the company document its efforts in Social Sustainability according to one specific standard generally accepted? <ul style="list-style-type: none"> 1 not at all 2 in process / planning 3 company standard / business standard 4 Global Compact or any specific industry standard 5 international GRI standard (Global Reporting Initiative) 4. Social sustainability was made to company's long-term program and they actually implement the measures. 5. At our company, as much attention is paid to social factors as to economic factors. 	EC1, EC5, LA1, HR1, HR3, HR4, SO12.
2. Corporate Social Expertise	<p>Going beyond business; culture people skills for:</p> <ul style="list-style-type: none"> - Health preparedness. - Social hedging. - Gender equality. - Diversity employees social hedging. 	<ol style="list-style-type: none"> 1. The unit provides active support for the healthcare of employees (e.g. sports facilities, nutrition courses, health checks). 2. At company, corporate practices invariably conform to the ethical and moral principles of our stakeholders (both internal and external). 3. In the event of dismissals or cutbacks, you can be sure that due consideration will be given to the individual employee's personal circumstances. 	LA3, LA5, LA6, LA7, LA8, LA13, PR1.

		<ol style="list-style-type: none"> 4. When someone is ill, he or she can recover at home without having to fear negative consequences. 5. In our unit, everyone is treated with the same degree of respect, regardless of nationality, sexual orientation or religion. 6. In our unit, each employee receives the same reward for the same work. 7. Women and men have the same opportunities. 8. At our company, care is taken to ensure that all employees enjoy a good standard of living. 9. Care is taken to ensure that employees enjoy a good balance between work and leisure time. 	
<p>3. Clear Objectives</p>	<ul style="list-style-type: none"> – Set goals for company and employees. – Identify performance indicators for benchmarking systems. 	<ol style="list-style-type: none"> 1. Our company established qualitative and quantitative targets for sustainability. 2. The achievement of sustainability goals is continuously compared with measurable indicators. 3. The way ahead and the framework for the achievement of sustainability tasks are made clear to the workforce. 4. Everyone assumes responsibility for the achievement of his or her goals according to sustainable aspects as to economics. 5. Our claims for sustainability are ambitious. We lead to the best-case solution compared to benchmarks. 	<p>EN6, EN7.</p>
<p>4. Alliance to Business Strategy</p>	<ul style="list-style-type: none"> – Integration into core business – Relevance according to economic impact – Strategic analysis to opportunities and risks – Preserve customers' satisfaction 	<ol style="list-style-type: none"> 1. Our corporate strategy considers sustainable designed products and services. 2. Risks of environmental and social aspects are as valued as corporate- and financial risks. 3. Our company is committed to sustainability as well as to market strategy. 4. To follow a social sustainable behaviour, even has 	<p>EC1, EC2, EC8, PR5, TE26.</p>

		<p>important economic benefits for our company</p> <ol style="list-style-type: none"> 5. Customer needs are always met with our company in the first place. 6. Overall, sustainability is an opportunity for our company. 	
<p>5. Community Contribution</p>	<ul style="list-style-type: none"> - Link to local community or region community. - Local suppliers involved. - Employees and management from local community. 	<ol style="list-style-type: none"> 1. Our Company is deeply rooted in its home region. 2. Beyond business we contribute to the community in our local area and promoting its development. 3. Regional business partners are involved as suppliers and service providers as far as possible. 4. The measures of our social sustainability are also related to suppliers. 5. A certain share of managers and employees are recruited from the region of our locations. 	<p>EC5, EC6, EC9, LA1, SO1, SO2.</p>
<p>6. Assume Corporate Responsibility</p>	<ul style="list-style-type: none"> - Take responsibility for corporate's activity and results; ecological needs / preserve energy, water, resources, biodiversity - Workers' rights / freedom to negotiate - Respect for human rights / anti-corruption 	<ol style="list-style-type: none"> 1. Decisions and actions are geared not only to the present situation but also – and especially – to future challenges and visions. 2. At our company, as much attention is paid to environmental consequences as to economic consequences. 3. Sustainability management leads to entrepreneurial solutions, which is supposed to solve the possible impact of our business on the future's world. 4. Our company is committed to the protection of human dignity and human rights and we respect them in our area of influence. 5. We trust on workers' rights, respect legally standards and encourage the participation of employees. 6. We prevent discrimination due to sex, race, religion or political ideology consistently. 	<p>HR1, HR3, HR5, HR6, EN1, EN2, EN3, EN4, EN16.</p>

7. Rules and Processes in Company	<ul style="list-style-type: none"> – Specific system for achievements – Employees involvement on operational changes, incl. collective agreements 	<ol style="list-style-type: none"> 1. Our company implements a sustainable strategy by policies and processes 2. Action plans are set up to achieve sustainability goals. 3. Objectives, policies and processes for implementing sustainability are managed by a sustainability officer. He/she leads a continuous process for implementation. 4. At our company, employees are involved on changes in operation and circumstances. 5. When decisions are taken, every effort is made to ensure that an agreement is reached which covers the different interests involved. 6. In our unit, compromises are made if there is a clash of interests. 7. Violations of sustainability policies are systematically followed by sanctions to prevent recurrence. 	LA4, SO47.
8. Preserve & Promote Employability	<ul style="list-style-type: none"> – Support personnel skills – Employees receive regular performance and career development – Employee training and education provided 	<ol style="list-style-type: none"> 1. It is clearly felt in our unit that the know-how of its workforce is its greatest asset. 2. Great care is taken to ensure that all employees are protected against danger. 3. Company offers its employees the prospect of developing themselves and their career by undertaking challenging tasks. 4. Our Company attaches great importance to organising regular training courses/seminars for its personnel. 	LA9, LA10, LA11, HR2, SO4, SO47.
9. Measurement, Planning & Control	<ul style="list-style-type: none"> – Strategic analyses of opportunities and risks – Set goals for planning and control results 	<ol style="list-style-type: none"> 1. Management analyses the opportunities and risks for the company rather on a long-term strategy than on short-term goals. 2. Sustainability objectives and activities of the company are regularly measured by achievement level. 3. The company discloses which sustainability targets are set and how compliance is monitored. 	EN35, EN36, EN37, EN38, EN39, TE3, TE52.

10. Improvement	<ul style="list-style-type: none"> – Steadily improve the level of social sustainability – Link to innovation management 	<ol style="list-style-type: none"> 1. Procedures, processes and concepts of social sustainability are improved continually. 2. Target gaps of our sustainability strategy are disclosed. 3. The innovation of products and services (R&D) is also aiming to improve the sustainability of resource use and customers' consumption. 4. Company's sustainability performance is part of the evaluation of top management level. 5. Management, employees and all market participants are motivated by our company to improve the sustainability performance continuously. 	HR2, SO12, EN27, EN28.
11. Communication	<ul style="list-style-type: none"> – True dialog with stakeholders – Transparency – Periodic reporting; report regularly on goals, measurements and achievements – Programs for adherence to laws related to marketing communications, advertising, promotion, sponsorship 	<ol style="list-style-type: none"> 1. All important data and information concerning company's sustainability are made available to employees. 2. Processes and decisions are declared openly and actively communicated. 3. The relevant stakeholders of the company are well known and are involved in the communication systematically. 4. To be honest, our company's sustainability is a good public relations campaign, less a corporate strategy. 5. Any communication (related to marketing-communications, advertising, promotion, sponsorship) of our company meets the requirements of truth and clarification. 6. We defined the social sustainability and our values within a mission statement. 7. I have the feeling that my personal values are very similar to those of our company. 	LA4, LA5.

5 CONCLUSIONS

The current document, Deliverable D1.2 “Report on key indicators of social sustainability”, has provided a comprehensive, long-list of indicators which are related to manufacturing and potentially relevant to social and economic sustainability. This list has also supported the decision on the eleven (11) main dimensions of social sustainability indicators which are expected to be further studied within the context of the SO SMART project. The relation of specific indicators with these main dimensions has also been provided together with a preliminary approach on how to evaluate which of these dimensions are met in terms of social sustainability.

The current definition and classification of the collected indicators was the first required step, with the consortium now looking forward to their further analysis and to the exploration of connections between them. An initial effort concerning identified connections between these indicators is already provided in the online sheet mentioned in Section 3. Based on this, a detailed analysis and elaboration on these connections has been provided in T1.3/D1.3, demonstrating efficient exploitation of the material provided by the current document. Therefore, it is accordingly expected that Deliverable D1.2 “Report on key indicators of social sustainability” will also be efficiently used in the next phases of the project, providing valuable information and supporting future work.

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