EU BEET SUGAR
SUSTAINABILITY
PARTNERSHIP

GOOD PRACTICES

PART A: CULTIVATION
PART B: PROCESSING
PART C: HUMAN RIGHTS & SOCIAL PRACTICES

GOOD PRACTICES:
AN OVERVIEW

PART A: BEET CULTIVATION

Covers all steps from field selection, seed acquisition and beet cultivation to the arrival of the sugar beet at the factory's beet reception. Plant health, water & soil quality, biodiversity and emissions are some of the key focus areas of sustainability in the cultivation stage. The good growing practices cover the following main topics:

1. SOIL FERTILITY & PLANT NUTRITION
2. PLANT HEALTH
3. WATER
4. FIELD BIODIVERSITY
5. MINIMISATION OF LOSSES / RESOURCE USE EFFICIENCY
6. EMISSIONS

ANNEX A1: RELEVANT EU LEGISLATION

PART B: PROCESSING

Covers the preparation of the beet at the factory up to and including the crystallisation of sugar and the processing of other valuable products. Sugar production, besides the primary product itself, gives rise to products such as molasses, beet pulp and lime fertiliser (also called 'Sugar Factory Lime'). Resource efficiency (with the focus on the full utilisation of sugar beet products), energy use, and water management are the key focus areas of sustainability in the beet processing all stages. The good processing practices cover the following main topics:

1. RESOURCE EFFICIENCY
2. LOCAL IMPACTS
3. WATER EFFICIENCY & PROTECTION
4. ENERGY USE

ANNEX B1: RELEVANT EU LEGISLATION

PART C: HUMAN RIGHTS & SOCIAL PRACTICES (AGRICULTURE & PROCESSING)

Social practices are based on the eight core categories of the Corporate Social Responsibility (CSR) Code of Conduct agreed by the Comité Européen des Fabricants de Sucre (CEFS) and the European Federation of Trade Unions in the Food, Agriculture and Tourism sectors (EFFAT). The Code of Conduct was launched in 2003 and came into effect in 2004. A new category 'local economy' has been added for the purposes of elaborating the Good Practices. More information on the code can be found http://www.eurosugar.org/corporate-social-responsibility/code-of-conduct/. The good social practices cover the following main topics:

1. LABOUR RELATIONS
2. EMPLOYMENT
3. EDUCATION & TRAINING
4. OCCUPATIONAL HEALTH & SAFETY
5. STAKEHOLDER RELATIONS

ANNEX C1: ADDITIONAL CASE STUDIES

GOOD PRACTICES:
PART A – CULTIVATION

The good beet growing practices span from the selection of the field, the seed acquisition and beet cultivation to the arrival of the sugar beet at the factory's beet reception point.

In order to manage their activity, beet growers must take into account many factors and risks, some of which are beyond their control, for example soil type, weather conditions or the spread of certain plant diseases. Beet growers also grow other crops on their farms. In order to face such uncertainty and variability and manage the risks, growers require a diversity of possible responses in their technical itinerary. No single technical itinerary will be satisfactory every year, for every grower, everywhere in Europe. The variability within the EU's diverse natural and climatic conditions requires an open toolbox of technical itineraries to achieve sustainable beet growing in different parts of Europe.

The good beet growing practices gathered in this report are representative for the beet sugar sector at European level and cover many different topics. The good practices are formulated in a way that allows their application to the different soil, climatic and weather conditions as well as cropping systems existing in the EU beet sugar sector. However, they are not a technical guidance document (i.e. growers' guidelines) on how to cultivate sugar beet, nor do they constitute benchmarks or minimum requirements which must be met. Many good practices in beet growing and, generally, in EU agriculture, have become codified in law over the years. Indeed, the EU's extensive and detailed regulatory framework ultimately provides a high level of 'compulsory' environmental sustainability for EU farmers. The good beet growing practices cover the following main topics:

1. SOIL FERTILITY & PLANT NUTRITION
   - 1.1 Maintaining the organic matter
   - 1.2 Protecting beneficial organisms
   - 1.3 Control of soil-borne pathogens
   - 1.4 Preventing erosion & compaction
2. PLANT HEALTH
   - 2.1 Integrated crop protection
   - 2.3 Efficient use of plant protection products
3. WATER
   - 3.1 Preventing run-off to watercourses
   - 3.2 Preventing nitrate leaching
   - 3.3 Efficient irrigation
4. FIELD BIODIVERSITY
   - 4.1 Protect wildlife habitats
5. MINIMISATION OF LOSSES / RESOURCE USE EFFICIENCY
   - 5.1 Limit losses during harvest
   - 5.2 Limit losses during storage
   - 5.3 Material cycles
6. EMISSIONS
   - 6.1 Energy efficiency
   - 6.2 Protecting carbon sinks

ANNEX A1 – RELEVANT EU LEGISLATION

1. SOIL FERTILITY AND PLANT NUTRITION

Keeping the soil in good condition is vital to ensure crops can continue to be grown into the future. Excessive tilling leads to loss of topsoil. The use of mulch, reduced tilling and of cover crops (catch crops and green manure) can all help promote soil stability, biodiversity and fertility. Sugar beet is grown in rotation with other field crops, thus mitigating the depletion of crop-specific nutrients and the accumulation of crop-specific pests & diseases.

EXAMPLE: USE OF ONLINE FERTILISER SERVICES TO ENSURE OPTIMAL PLANT NUTRITION, EUROPE

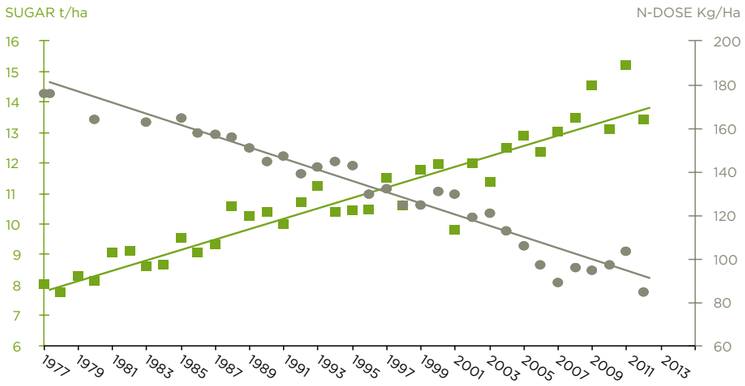
- Fert-Consult, Belgium
- Azofert, France
- LIZ-Dungpro and BISZ Düngung, Germany
- Integrated Beet Nutrition (NIB), Italy
- Applicatie NPK-bemesting, Netherlands
- GPS controlled soil sampling, analysis and fertiliser recommendation in Beta Kutató Intézet, Hungary

Soil system analysis introduced in Austria, Southern Germany, the Slovak Republic and Romania leads to sugar beet fertilisers recommendations systems established jointly by industry and growers associations.

EXAMPLE: DETERMINING NUTRIENT REQUIREMENTS, FRANCE

In France the method used is based on a 'balance method' accessed via software ('Fertibet' and 'Azofert') available online for growers, which calculates the nutrient requirements precisely through an annual measure of nutrients in the soil. The performance of the nitrogen-specific Azofert software is being further improved by the development of 'Reliquat Azoté Virtuel'. This indicates the virtual mineral nitrogen reserves in the soil, using estimates of nitrogen inputs and nitrogen consumption – including basal mineralisation and water transfer in the soil. This forms a sound basis for the establishment of the Azofert balance and the corresponding nitrogen requirements; this in turn can contribute to preventing nitrate leaching (see chapter 3).

DIAGRAM 1: EVOLUTION OF SUGAR YIELD AND N-DOSE IN FRANCE, 1977-2012



Source: French Technical Institute for Beet, ITB.

1.1 MAINTAINING ORGANIC MATTER AND ENSURING ADEQUATE PLANT NUTRITION

GOOD PRACTICE	DESCRIPTION
Soil analyses to determine nutrient status and fertiliser requirements	Numerous institutes provide soil sample analyses to determine the soil's nutrient status and nutrient availability to plants, leading to fertiliser recommendations. These allow the growers, in the context of crop rotation and site-related factors, to provide fertiliser (N, P, K, Ca, Mg, B, and S) according to both actual soil nutrient contents & availability and the crop's requirements.
Appropriate cultivation practices & appropriate use of inputs	In all major beet producing countries, institutions dedicated to sugar beet cultivation carry out successful research on inter alia fertiliser application, resulting in increased fertiliser use efficiency e.g. less nitrogen fertiliser applied per tonne of sugar produced.
Incorporation of residues into soil	Crop residues (straw, beet leaves) are the main source of organic matter returned to the soil. They lead to humus formation and thus contribute to an increase of humus content. Humus levels are the basis for stable soil structure, high water retention capacity and nutrient availability.
Use of organic fertilisers (manure & compost)	Farmyard manure (FYM), rich in nutrients and with a positive effect on soil structure, can be brought to the field. FYM as well as slurry mixed with straw have positive effects on soil fertility.
Use of reduced tillage systems	Reducing or avoiding ploughing where economically possible can be seen as a measure to maintain the organic status of a soil.

1.2 PROTECT BENEFICIAL ORGANISMS

GOOD PRACTICE	DESCRIPTION
Sowing into mulch or reduced tillage	Where it is agronomically and economically feasible, minimal tillage and mulch sowing can be used in beet growing in order to provide and enhance organic matter. Green manures provide organic matter for soil organisms such as earthworms, provide shelter for animals and can help reduce the nematode population.

1.3 CONTROL OF SOIL-BORNE PATHOGENS

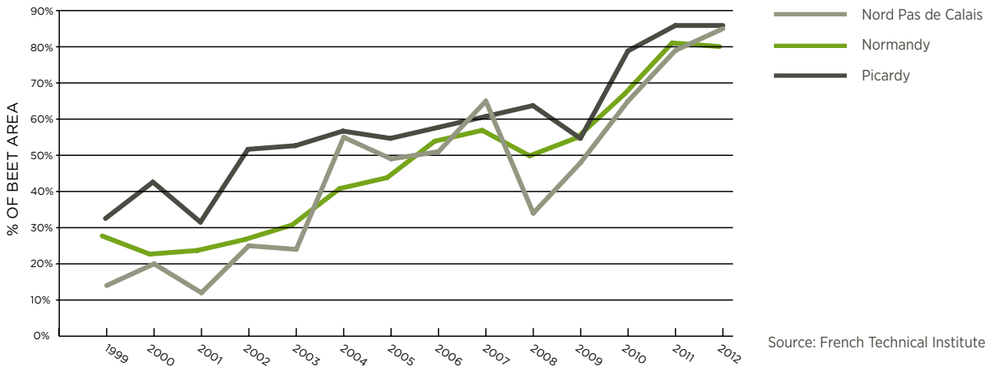
GOOD PRACTICE	DESCRIPTION
Crop rotation	The cultivation of sugar beet reduces the level of cereal diseases and pests and thus reduces the amounts of pesticides applied to cereal crops in rotation with sugar beet. This is because sugar beet is seldom a host to pests and diseases that affect combinable crops.
Use of catch crops and green manures	The combination of different crops and use of catch crops and green manures reduces the level of pests and diseases. Moreover it increases soil biodiversity and keeps a balance between beneficial microorganisms and soil-borne pathogens. This measure is combined with the use of resistant varieties where growers can choose between several varieties, resistant for example to Rhizomania, nematodes, as well as in certain parts of Europe to Cercospora bieticola and/or Rhizoctonia.

1.4 PREVENTING EROSION & COMPACTION

EXAMPLE: CATCH CROPS, FRANCE

In France the use of catch crops to minimise erosion is being extended to several regions. The graph illustrates the development of catch crops over the last decade in three French regions (Normandy, Picardy and Nord-Pas de Calais). In 2000, catch crops were used on 20-30% of the beet area; now they are used on 80-90%. In addition, the development of beet cultivation without prior ploughing started in France in the late 1990s. Such techniques have been implemented by growers with the aim of protecting the soil against climatic adversities and in particular against erosion, but also to enhance soil biodiversity.

DIAGRAM 2: % CATCH CROP COVER BEFORE BEET IN REGIONS PRONE TO EROSION IN FRANCE



Source: French Technical Institute for Beet ITB

GOOD PRACTICE	DESCRIPTION
Reduced tillage	Erosion prone areas are detected and monitored using past records and cartography. Depending on soil type, soil structure and on the amount and distribution of precipitation, a certain degree of soil loosening can help reduce risk of erosion.
Use of intermediate crops	Intermediate crops may remain in the field during winter. Intermediate crops and their residues cover the soil until sowing – and, depending on the system of soil preparation, even until full establishment – of the following crop. High microbiological activity, intense rooting, adjusted incorporation of crop and intermediate crop residues help to stabilise soil structure and improve soil fertility. Intermediate crops can be an important substrate for soil microorganisms and their activity. Up to 4 t/ha dry matter is additionally available for humus formation.
Use of appropriate machinery for different degrees of soil moisture	Soil preparation is bound to different time windows. In case of sub-optimal conditions, soil preparation has to be postponed (and such delays may compromise the crop's yield potential). Appropriate planning and choice of machinery widens these narrow time frames.
Use of low pressure tyres	Field vehicles with high pressure tyres on wet soils can cause over-compaction of the soil and thus destroy soil structure, as well as resulting in higher fuel consumption and lower load-bearing capacity. Modern flexible low ground pressure tyres can decrease the risk of traffic induced soil compaction.

2. PLANT HEALTH

Plant protection products (PPP) play a vital role in ensuring the health and viability of crops, but they must be used under appropriate, controlled circumstances, together with non-chemical controls wherever possible. Using the right varieties and seeds for the prevailing conditions means farmers can optimise use of chemical protection in practice, keeping it to an essential minimum.

2.1 INTEGRATED CROP PROTECTION

EXAMPLE: BEET TECHNICAL INSTITUTES

Constant research is carried out to improve the sustainability of beet growing. In the EU there are 12 technical institutes that work to promote good agricultural practices. These institutes work together and have regular exchanges under the auspices of the IRRB (International Institute of Beet Research).

COUNTRY	INSTITUTE	ABBREVIATION	WEBSITE
BE	Institut Royal Belge pour l'Amélioration de la Betterave Koninklijk Belgisch Instituut tot Verbetering van de Biet	IRBAB KBIVB	www.irbab-kbivb.be/
CZ	Řepařsky Institut Semčice	RIS	www.semcice.cz
DK & SE	Nordic Beet Research	NBR	www.nordicbeet.nu
DE	Institut für Zuckerrübenforschung	IfZ	www.ifz-goettingen.de
ES	Asociación de Investigacíon para la Mejora del Cultivo de la Remolacha Azucarera	AIMCRA	www.aimcra.com
FR	Institut Technique de la Betterave	ITB	www.itbfr.org
IT	BETA Italia – Ricerca in Agricoltura	BETA Italia	www.betaitalia.it
HU	Beta Kutató Intézet	BKI	www.beta-kutato.hu
NL	Instituut voor Rationele Suikerproductie	IRS	www.irs.nl
AT	Zuckerforschung Tulln	ZFT	www.agrana-research.com
FI	Sokerijuurikkan Tutkimuskeskus	SJT	www.sjt.fi
UK	British Beet Research Organisation	BBRO	www.bbro.co.uk
CH	Schweizerische Fachstelle für Zuckerrübenbau / Centre betteravier Suisse	SFZ / CBS	www.zuckerruebe.ch

EXAMPLE: DECISION-MAKING TOOLS, EUROPE

In most EU beet producing countries growers can access online documents and software programs designed to assist decision-making regarding crop management. This includes the choice of variety and seed treatment, soil and seedbed preparation, sowing dates, the timing and choice of inputs (fertiliser, mechanical intervention, plant protection products) during the crop cycle, harvesting and storage. Examples of tools available to growers include online diagnosis – weed identification (Belgium, Denmark, Finland, France, Germany, Italy, Lithuania, the Netherlands, Poland, Spain, Sweden, Switzerland and the UK), an online BISZ leaf disease warning service (Germany) and an online decision support system (DSS) in Italy, including – inter alia – complementary Cercospora early warning systems CLS Beta and RER.

GOOD PRACTICE	DESCRIPTION
Crop rotation	Sugar beet is a rotational crop, grown from mid-March to mid-November (or from October to July in the case of autumn sown beet). As a root crop, sugar beet is a very valuable part of arable farming as it breaks up the mainly cereal-based rotation. Sugar beet is generally grown in the same field only every three to eight years, depending on climatic conditions and expected production. Crop rotation has several agronomic objectives; one of them is to help control pests and diseases by depriving them of their host crop and thus disrupting their life-cycles. Crop rotation is the first step in integrated pest management (IPM) and in the sustainable use of pesticides.
Use of resistant / tolerant varieties and appropriate host plant control strategies	Varieties can be tolerant/resistant to more than one bio-aggressor. A certain number of varieties are resistant/tolerant to important beet diseases such as Rhizoctonia solani and/or Cercospora beticola. Using such tolerant/resistant varieties can help tailor the use of chemical controls and optimise the application of plant protection products. One of the most serious diseases in sugar beet, Rhizomania, cannot be controlled effectively and practically in any way other than by growing Rhizomania tolerant/resistant sugar beet. Considerable progress in breeding for Rhizomania resistance/tolerance while maintaining the beet varieties' yield and quality performance have led to Rhizomania resistant/tolerant varieties becoming the new baseline in sugar beet growing. A similar development is occurring with one of the most serious sugar beet pests, beet cyst nematodes.
Field trials and advice	Beet research institutes continually carry out field trials: testing new PPPs, plant protection program efficiency, development of specific management techniques to avoid resistance against PPP and efficacy threshold determination. Such trials help determining the best practices available for beet growing. To optimise PPP use, advice to farmers includes: – Data-based systems for pest/disease monitoring & control – Choice of the good plant protection strategy, for example by combining mechanical and chemical weed control – The best efficacy with the lowest PPP when treatment is necessary. In all cases, advice respects legislation (use of approved PPPs, respect of the conditions of use, quantity, non-treatment area close to waterways, pre-harvest interval, general principles of IPM).
Use of decision supporting tools	Harmful organisms are monitored by a variety of methods and tools including: observations in the field as well as scientifically sound warning, forecasting and early diagnosis systems, and the use of advice from qualified advisors. Based on the results of the monitoring, the professional user can decide whether and when to apply plant protection measures. Robust and scientifically sound threshold values are essential for decision-making. For harmful organisms threshold levels defined for the region, specific areas and particular climatic conditions are taken into account before treatments. Tools available to professional users e.g. farmers include rotation choice, variety choice and strategies to control weeds, pests and diseases.
Professional qualification of users	Professional users, distributors and advisors have access to appropriate training by bodies designated by the competent authorities. This consists of initial and additional training to acquire and update knowledge as appropriate (Also see Field trials and advice).
Use of qualified sub-contractors	Professional users e.g. farmers verify that sub-contracted PPP distributors have sufficient staff in their employment by holding a certificate (also referred to in Article 5(2) of Directive 2009/128/EC). Such persons are available at the time of sale to provide adequate information to customers as regards pesticide use, health and environmental risks and safety instructions to manage these risks for the products in question.
Observation networks / early warning systems	At regional level, agricultural stakeholders (institutes, sugar industry, etc.) share their observations made on a network of beet plots of occurrence and progression of pests and diseases. Based on these observations, beet growers are warned on time that the disease may appear in their fields. The stakeholders also advise on good agricultural practices in sugar beet cultivation.
Use of pelleted and treated seeds	The fungicide / insecticide incorporated into the seed pellet is applied in a targeted way to protect with the best efficiency the young beet during the 80 to 90 days after sowing against, for example, soil borne pathogens and aphids (carrying viruses). Using these treated seeds avoids 2 to 3 post-emergence insecticide applications that would otherwise be necessary to protect the young plants. Thus the total amount of active substances applied per hectare is much lower.

2.2 EFFICIENT USE OF PLANT PROTECTION PRODUCTS (PPPs)

EXAMPLE: PHYTOFAR & PHYTOLICENCE, BELGIUM

Phytofar is the Belgian Industry Association of plant protection products. Phytofar promotes responsible use of plant protection products to ensure sustainable agriculture and safety for people, animals and the environment. Agri-Recover is collecting packaging of plant protection products, fertilisers, biocides and seed from all professional users.

The phytolicence is a certificate for professional users, distributors and advisors of plant protection products. This certificate will be mandatory from 25 November 2015 and will be valid for 6 years. The objective of phytolicence is to keep users informed of developments related to the use of plant protection products, and to limit as far as possible, the risks of these products on human and animal health and on the environment.

GOOD PRACTICE	DESCRIPTION
Targeted controls of small weeds	Beet research institutes, growers and sugar manufacturers work together on field trials. Early weed growth is the most appropriate stage to treat: the weed is more fragile, the PPP absorption is high, and the quantity required is low. Early herbicide application is the most efficient and cheapest method against weeds. Advisory services and farmers using identification tools are able to determine which kind of weed is present, even at an early stage, and which treatment strategy is the most efficient. Experience of farmers and advice from sugar beet inspectors are essential.
Keep a register of PPP use, external check of documentation	Each farmer has a PPP use register ensuring traceability and allowing controls. This register includes: targeted weeds/pests, treated field, product name, quantity, date of treatment. This documentation is checked and controlled by authorities or independent bodies.
Combined weed control	Mechanical and other non-chemical methods are, as much as possible, combined with chemical methods in order to provide sufficient protection against – and control of – pests and weeds. However, these techniques cause plant losses, require state-of-the-art and sophisticated machinery (i.e. considerable investments in GPS-RTK, cameras, self-guiding implements/elements etc.) to be efficient and are highly dependent on favourable weather conditions.
Use of tested and appropriately maintained equipment	The inspection of PPP application equipment covers all aspects necessary to achieve a high level of safety and protection of human health and the environment. Full effectiveness of the application operations is ensured by proper performance of devices and functionality of the equipment.
Spraying only during appropriate weather conditions	Suitable weather conditions are essential to obtain optimum efficiency of the applied product and to prevent spray drift into neighbouring fields.
Proper storage of pesticides & disposal of empty containers	PPP are stored in covered, closed areas that are constructed as to prevent unwanted releases and to protect them from the elements. In some cases the storage room or "storage box" must have certification. It must be locked (prevention of leakage and of usage by non-accredited persons), labelled etc. Once used, empty boxes and barrels are often treated as hazardous waste and have to be taken back by the PPP suppliers.

3. WATER

Run-off from arable fields – of topsoil, silt, fertiliser or plant protection products – can contaminate local watercourses. The improved manner in which chemicals are applied (type, quantity and timing), and erosion preventing measures, help limit run-off.

Crops may require irrigation, depending on the growing conditions throughout the season. However, the use of irrigation for sugar beet in Europe is applied mainly in Spain and Greece (representing less than 5% of EU beet area). In Belgium, Poland, Denmark and Finland (representing about 20% of EU beet area), sugar beet is not irrigated at all. In the Czech Republic, Germany, France, the Netherlands, Romania, Sweden and the UK (representing around 2/3 of EU beet area), only a small proportion of beet area (< 10%) is irrigated. In Italy, Hungary, Austria, Slovakia and Croatia (representing roughly 10% of EU beet area), between one quarter and one half of the beet area may be irrigated.

3.1 PREVENTING RUN-OFF TO WATERCOURSES

EXAMPLE: ASSESSING THE ADEQUATE AMOUNT OF NUTRIENTS FOR THE PLANT THROUGH ONLINE FERTILISER SERVICES SO AS TO MINIMISE THE RISK OF NUTRIENT RUN-OFF, EUROPE

- Fert-Consult, Belgium
- Azofert, France
- LIZ-Dungpro and BISZ Düngung, Germany
- Integrated Beet Nutrition (NIB), Italy
- Applicatie NPK-bemesting, Netherlands
- GPS controlled soil sampling, analysis and fertiliser recommendation in Beta Kutató Intézet, Hungary

Online fertiliser services not only allow appropriate plant nutrition (see chapter 1) but also limit unnecessary run-off to watercourses of unused amounts of nutrients.

Soil system analysis introduced in Austria, Southern Germany, the Slovak Republic and Romania leads to sugar beet fertilisers recommendations systems established jointly by industry and growers associations.

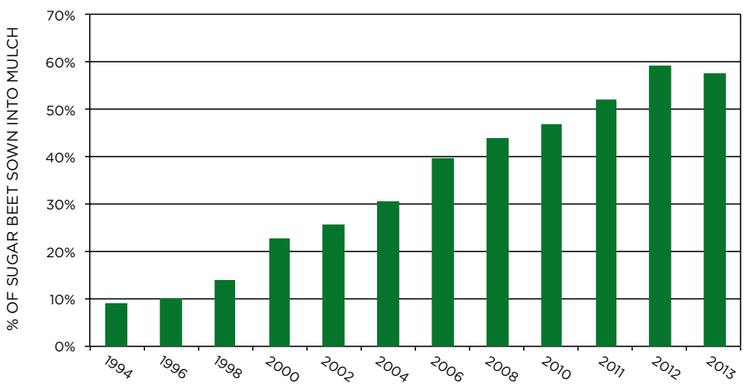
GOOD PRACTICE	DESCRIPTION
Appropriate cultivation practices & appropriate use of inputs	In all major beet producing countries, institutes dedicated to sugar beet cultivation carry out successful research on *inter alia* fertiliser application, resulting in increased fertiliser use efficiency e.g. less nitrogen fertiliser applied per tonne of sugar produced (see chapter 1) which helps preventing run-off of nutrients to watercourses
Use of buffer strips	Surface water run-off from fields is likely to contain pollutants such as sediment, nutrients etc. Buffer strips (usually grass) can provide a physical barrier that helps restrict the flow of pollutants and prevent them from being washed from the field into the watercourse. Creating buffer strips beside watercourses is especially necessary in case of higher field slopes, where run-off water from the field can contaminate nearby watercourses e.g. rivers, streams. Moreover buffer strips next to watercourses have to be declared and application of manure into soil during sensitive periods (e.g. snow cover, frozen surface) and landscape structure (e.g. hillside situation) is regulated by EU legislation and national support programs.

3.2 PREVENTING NITRATE LEACHING

EXAMPLE: DETERMINING NUTRIENT REQUIREMENTS, FRANCE

This method, described in chapter 1 and repeated here for the readers' convenience, provides an example of how an optimal fertiliser use strategy in turn contributes to efficiently preventing nitrate leaching. In France the method used is based on a 'balance method' accessed via software ('Fertibet' and 'Azofert') available online for growers, which calculates the nutrient requirements precisely through an annual measure of nutrients in the soil. The performance of the nitrogen-specific Azofert software is being further improved by the development of 'Reliquat Azoté Virtuel'. This indicates the virtual mineral nitrogen reserves in the soil, using estimates of nitrogen inputs and actual nitrogen consumption – including basal mineralisation and water transfer in the soil. This forms a sound basis for the establishment of the Azofert balance and the corresponding nitrogen requirements; this in turn can contribute to preventing nitrate leaching.

DIAGRAM 3: EVOLUTION OF SOWING INTO MULCH IN GERMANY, 1994-2013



Source: Institute for Sugar Beet Research (IfZ), Göttingen (Germany)

GOOD PRACTICE	DESCRIPTION
Soil analyses to determine nutrient status and fertiliser requirements	Numerous institutes provide soil sample analysis leading to fertiliser recommendations. These allow the growers, in the context of crop rotation and site-related factors, to provide fertiliser (N, P, K, Ca, Mg, B, and S) according to both actual soil nutrient contents & availability and the crop's requirements (see chapter 1). This helps preventing nitrate leaching.
Crop rotation with cereals	Catch crops (e.g. mustard and oil radish) can be grown after cereals (wheat, barley etc.) to "catch" nitrate residues, preventing them from leaching into deeper soil layers. Drilling beets into catch crop mulch is a common technique used in hilly regions.
Use of maintained equipment	Optimal fertiliser application is achieved by regulating the amount and specifying the placing of the nutrients: therefore, modern and well-maintained equipment is used. Specifically the growers use mechanically powered or pneumatic drilling. The latter technique can be supported by GPS-systems.
Fertiliser application adapted in vulnerable zone	Application is adapted to water protection areas, regulated by EU legislation, specifically for nitrogen fertiliser use to protect water (groundwater and surface run-off).

3.3 EFFICIENT IRRIGATION

EXAMPLE: EFFICIENT IRRIGATION, ITALY, SPAIN & FRANCE

Irrigation of sugar beet is generally not used much in central and northern Europe and it is only regularly applied in southern Europe depending on the weather conditions of the crop year. Efficient use of irrigation – done responsibly and in compliance with the law – is key to ensuring best crop performance with the minimum of water. Good irrigation practices have been developed in order to only apply the water needed, avoiding unnecessary water use.

- 'Acqua Facile', developed by Beta Italia, consists of a dataset with historical temperatures (with updates) for all Italian beet-growing provinces and a multiple function to calculate water requirements and to set up appropriate irrigation systems.
- 'Balance Hídrico', developed by AIMCRA, allows farmers in Spain to know the water needs of their crops in real time, via the Internet and mobile phone.
- 'Irribet', developed by ITB, allows each grower in France to calculate (by referring to the nearest rainfall and evapotranspiration measuring stations) the water balance for each field, based on a model specifically adapted to the beet crop.

GOOD PRACTICE	DESCRIPTION
Irrigation management plans and maintenance of equipment	Appropriate irrigation systems are set up and calculations of the crop's water requirements are performed throughout the crop cycle. Irrigation equipment, when used, is maintained regularly in order to avoid leakage of water or corrosion.

4. FIELD BIODIVERSITY

The local environment in which crops are grown is essential for wildlife and biodiversity. Good practices in sugar beet cultivation, such as sowing into mulch and maintenance of hedges, ponds, ditches and trees and using field margins provide much-needed habitat for many species.

4.1 PROMOTE AND PROTECT BIODIVERSITY AND WILDLIFE HABITATS

EXAMPLE: PILOT PROJECT BLÜHFLÄCHEN (FLOWER STRIPS), SÜDZUCKER GERMANY AND SOUTH GERMAN BEET GROWERS

This project was launched in 2014, involving some 150 beet growers and Südzucker providing the seed mixtures consisting of different flowering plant species such as sunflower, blue lupin, cornflower, tufted vetch, safflower, crimson and Persian clover, pot marigold, nonesuch, lacy phacelia, flax, tagetes and poppy. Such flower mixtures, sown mostly in field margins but also on former or future sites for beet clamps, can provide provide habitat and food as well as refuge for honey bees, butterflies, earthworms, birds and other wildlife. They also bind the free nitrogen in the soil, contribute to humus formation, improve soil structure and promote intensive soil life.

GOOD PRACTICE	DESCRIPTION
Sowing in mulch	Sugar beet seeds can be sown into mulch in order to reduce the risks of soil erosion, to maintain the natural structure of the soil and to improve its load bearing and water drainage capacity. Moreover, the nutrients are retained within the soil. Depending on the distribution of the organic material in the soil and its moisture status, mulch sowing can be done with or without seedbed preparation. There are two types of mulch: • Catch crop: The cultivation of a catch crop which is destroyed by frost (such as yellow mustard) in areas with adequate soil moisture, is ideal for mulch sowing thanks to its ground cover and soil rooting behaviour. • Straw: It is frequently not possible to plant a catch crop in dry regions where the preceding crop is harvested at a very late stage. Under such circumstances, the straw from the harvested crop remaining on the fields can be used to cover the soil surface. Such a practice also retains the stubble from the previous crop providing an important resource for wildlife, in particular for overwintering farmland and other migrant birds (see below).
Retention of landscape features	The nature of the sugar beet crop means that fields retain an open vegetation structure until late spring, which is conducive to many ground-nesting birds whose breeding season begins at the same time, such as the stone-curlew, lapwing and skylark. The sparse vegetation of sugar beet after mid-May, in contrast to the density of other arable crops at that time, means that stone curlews can have second breeding attempts, a factor that is important for their population. Retention of landscape features including hedges, ponds, ditches, trees in line, in groups or isolated and field margins are therefore necessary.
Use of field margins	An arable field margin is a herbaceous strip of land lying between a crop and the field boundary, and extending for a limited distance into the crop. Arable field margins are usually situated on the outer 2-12m margin of the arable field, although when planted as blocks they occasionally extend further into the field centre. These areas can be deliberately managed to create conditions benefitting key farmland species such as hares, rabbits, foxes and numerous bird species. Specifically a field margin creates nesting and feeding ground as well as refuge during winter or from predators. As linear features, field margins can also act as corridors for the movement of fauna and possibly flora. In that way fauna and flora does not enter the cultivation area and affect the crop (e.g. pests). The following arable field margins are included in this habitat: Cultivated, low-input margins: These are areas within arable fields that are cultivated periodically, usually annually or biennially, but are not sprayed with insecticides and not normally sprayed with herbicides. Margins can be sown to provide seed for wild birds. These are margins or blocks sown with plants that are allowed to set seed and which remain in place over the winter. Margins sown with seed-mixes including wild flowers are managed to allow flowering to provide pollen and nectar for invertebrates. Margins providing permanent grass strips with mixtures of tussock and fine-leaved grasses.

5. MINIMISATION OF LOSSES / RESOURCES USE EFFICIENCY

The best harvesting and storage methods help minimise losses of sugar beet crops and maximise yields. A range of valuable by-products arises from sugar beet harvesting and processing (see Good Practices – Part B – Processing for more information on products).

5.1 LIMIT LOSSES DURING HARVEST & DELIVERY

EXAMPLE: HARVEST LOSSES APPLICATION &' TRAINING OF BEET HARVESTER OPERATORS, NETHERLANDS

The online application from IRS consists of multiple tools that help in the cultivation of sugar beets. The 'Harvest Losses' app allows the user to calculate the loss of harvested beets and gives advice on preventing beet loss. From 2009 to 2011, IRS (with CUMELA) provided practical training to beet harvester operators, providing information on desired harvest quality and on the importance of quality harvesting to ensure maximum sugar yields and to minimise losses in storage.

GOOD PRACTICE	DESCRIPTION
Well maintained equipment & driver training	Growers, contractors and industry continuously invest in harvesting equipment and trained drivers. The focus is on minimal losses of beet tips and beet tops and prevention of beet damage.
Planning of harvest according to available transport	Sufficient harvest time and adequate harvesting and storage capacities are prerequisites. To ensure the continuous supply of sugar factories with beet throughout the ever longer processing campaign, a certain proportion of the beet needs to be stored after harvest for varying periods of time. Beet clamps accessible to cleaner loaders and near roads accessible to trucks further mitigate the risk of beet supply shortage.
Raw material flows – delivery scheduling	Efficient beet processing requires accurate control of enormous material flows and continuous beet delivery to the factory. Harvesting sugar beet from the field and their delivery to sugar factories therefore takes place according to a precise schedule.

5.2 LIMIT LOSSES DURING STORAGE

EXAMPLE: KEEP BEETS NEWSPAPER, SUIKERUNIE, NETHERLANDS

Suiker Unie supplies growers with a Beet Storage Newspaper and an information card providing advice on the best practices for storing of beet to maintain quality and prevent losses.

GOOD PRACTICE	DESCRIPTION
Preparation of adequate beet clamp storage and regular monitoring of the clamp conditions	Beet processing generally takes place from September to January and increasingly beyond (or, in the case of autumn sown beet, from June to August). Until the risk of difficult/adverse conditions for harvesting increases, usually around mid-November, beets are harvested "Just-In-Time". Until mid-November storage losses are therefore minimal. During the storage period beet are stored outdoors on suitable storage sites. Many beet clamps are covered to protect the beet against frost and rain. Storage conditions such as clamp temperature are monitored. There is considerable research into limiting beet and sugar losses during storage.

5.3 MATERIAL CYCLES BETWEEN AGRICULTURE AND PROCESSING

EXAMPLE: REMOVAL OF SOIL TARE, EUROPE

During beet harvest and loading the main focus is on removing as much soil as possible without damaging the beet in the process. The trend has been a decrease in soil tare through better harvesting techniques and the use of cleaning machinery in the fields. There is a clear relationship between the use of beet cleaning machinery and soil tare. In several countries (e.g. CZ, DE, UK) all beet is cleaned during loading. In many countries (BE, CH, DK, DE, GR, IT, HU, NL, AT, PL, SK, FI, SE, UK and TR) soil tare levels are already below 10% – and both farmers and processors continue to try and make further improvements.

GOOD PRACTICE	DESCRIPTION
Soil tare	Sugar beets are often pre-cleaned in the field to allow their processing to commence in the factory without delays but also to conserve the organic matter and structure of the soil in the fields. Agricultural soil delivered with the beets to the factory is separated during the cleaning process. Due to its high quality it can be sent back to the land.

6. EMISSIONS

Reducing energy consumption through a wide variety of efficient methods helps limit CO_2 emissions from beet cultivation. Reducing tillage and using efficient machinery limit energy use while soil provides essential carbon sinks in which atmospheric CO_2 is locked away. Carefully assessing and managing soil nutrient levels and minimising soil removal during harvesting can help protect carbon sinks. Fuel consumption is managed by using efficient and well-maintained vehicles and by effective planning of beet transport.

EXAMPLE: ASSESSMENT OF ENERGY INTAKE & GHG EMISSIONS IN THE PO VALLEY, ITALY

This study shows that sugar beet has a highly positive energy balance and is a high net CO_2 absorbing crop.
More information on the research can be found http://www.betaitalia.it/UploadedFiles/poster/An_assessment_of_energy_intake.pdf.

6.1 ENERGY EFFICIENCY

GOOD PRACTICE	DESCRIPTION
Reduced tillage	Due to improved mechanisation, farmers use – wherever feasible – more and more simplified methods like direct sowing and combined machines.
Efficient tractors & harvesters	New generation of tractors and harvesters reduces diesel consumption and exhaust emissions.
Use of beet trucks with high loading capacity	Sugar factories increased their capacities and thus require more efficient loading capacity.
Planning tools for beet transport	The organisation of beet loading and transport is based on a schedule, usually established by the sugar factory in close cooperation with the growers and/or hauliers. The principle is to optimise the distances travelled and to be more efficient in terms of beet supply to the factory.
Soil removal	Harvesters are equipped with cleaning systems, leaving a maximum amount of soil in the field. In addition, contractors and/or sugar factories organising beet transport use cleaning machines (cleaner-loaders) to load the beet into the lorries. Reduction in soil tare reduces the number of lorry trips resulting in lower fuel consumption.
Lorry weight & load	New lorry weight and load regulations across the EU beet processing countries have reduced the number of journeys, meaning less environmental impact per tonne of transported beet. Notably, the higher permitted tonnage of lorries, 29 tonnes on average in the EU, greatly contributes to less carbon emissions. In some countries, such as the Netherlands, the trucks are allowed to carry up to 35 tonnes of sugar beet on each journey, thus maximising the reduction in fuel consumption and the associated environmental impact.

6.2 PROTECTION OF CARBON SINKS IN THE SOIL

GOOD PRACTICE	DESCRIPTION
Soil analysis for nutrients	Different methods exist to determine the optimum quantity of N to be applied. They are based on analysis results or on technical advice, both taking into account the mineralisation of the organic matter, residues from previous crops, weather conditions, added organic fertiliser etc.
Stabilise / increase organic content in soil	Sugar beet leaves usually stay in the field. This represents a high quantity of organic matter that helps preserve carbon sinks. Livestock farms can provide manure that is high in organic matter.
Use of harvesting machines with cleaning systems	The harvest machines as well as the loading machines are equipped with cleaning systems. This reduces the amount of soil transported with the sugar beet to a feasible minimum and reduces loss of organic matter in the soil.

ANNEX A1
RELEVANT EU LEGISLATION

SUSTAINABILITY PRINCIPLE	EU LEGISLATION
Plant Health – Integrated crop protection	• Regulation on the financing, management and monitoring of the Common Agricultural Policy Regulation 1306/2013, Art.94 (Obligations of Member States relating to good agricultural and environmental condition) • Regulation establishing rules for direct payments to farmers under support schemes within the framework of the Common Agricultural Regulation 1307/2013, Chapter 3 (Payment for agricultural practices beneficial for the climate and the environment), notably Articles 43 & 44 and Annex IX (2). • Directive establishing a framework for Community action to achieve the sustainable use of pesticides Directive 2009/128/EC Article 14.4 (implementation by professional users of general principles of Integrated Pest Management –IPM- by 1st January 2014) and Annex III, (General Principles of IPM)
Plant Health – Efficient use of plant protection products	• Directive establishing a framework for Community action to achieve the sustainable use of pesticides Directive 2009/128/EC • National Action Plans (all beet growing Member States) on Sustainable use of PPPs • Integrated pest management • Directive 2009/127/EC amending Directive 2006/42/EC with regard to machinery for pesticide application
Water – Prevent run-off	• Directive establishing a framework for Community action to achieve the sustainable use of pesticides Directive 2009/128/EC Article 4 (National Action Plans) • National Action Plans (all beet growing MS) on Sustainable use of PPPs: • Nitrates Directive (91/676/CEE) Annex II (codes of good agricultural practice) • Water Framework directive (WFD 2000/60/EC)
Water – Prevent nitrate leaching	• Nitrates Directive (91/676/CEE) Annex II (codes of good agricultural practice)
Water – Efficient irrigation	• Adoption of River Basin Management Plans (RBMP) with Programmes of Measures (PoMs) in each MS (EL & ES pending)
Soil Fertility – Soil & Field Biodiversity	• The Common Agricultural Policy contributes to preventing and mitigating soil degradation processes. In particular, agri-environment measures offer instruments to promote the increase of soil organic matter, the enhancement of soil biodiversity, the reduction of soil erosion, contamination and compaction. In addition, the provisions of cross-compliance, notably regarding the obligation to keep agricultural land in good agricultural and environmental condition, can play an important role for soil protection. • http://ec.europa.eu/environment/soil/index_en.htm • http://ec.europa.eu/environment/soil/three_en.htm • http://ec.europa.eu/agriculture/envir/soil/index_en.htm
Waste	• Directive 2008/98/EC on waste Article 5 (criteria for substances or objects to be regarded as by-products and not waste)
Emissions	• Regulation 1306/2013, Art.94 (Member States shall ensure that all agricultural land....is maintained in good agricultural and environmental condition)
Traceability	• Article 18 of Regulation 178/2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety.

CREDIT: STUAD70

GOOD PRACTICES:
PART B – PROCESSING

Good processing practices cover the preparation of the beet at the factory up to and including the crystallisation of sugar and the processing of other valuable products. Sugar production, besides the primary product itself, gives rise to valuable products such as molasses, beet pulp and lime fertiliser (also called 'Sugar Factory Lime'). Resource efficiency (with the focus on the full utilisation of sugar beet products), energy use, and water management are the key focus areas of sustainability in the beet processing stage. The industry has, in particular, paid long-term attention to fulfilling its energy-saving potential through process optimisation and innovation. The good processing practices cover the following main topics:

1. RESOURCE EFFICIENCY
   - 1.1 Co-production
   - 1.2 Closed-loop (material cycles)
   - 1.3 Raw material efficiency
2. LOCAL IMPACTS
   - 2.1 Reduction of dust, odour, noise
   - 2.2 Vehicles and traffic management
3. WATER EFFICIENCY & PROTECTION
   - 3.1 Reduction of fresh water demand
   - 3.2 Preventing water pollution
4. ENERGY USE
   - 4.1 Energy efficiency
   - 4.2 Reduced carbon emissions

ANNEX B1 – RELEVANT EU LEGISLATION

1. RESOURCE EFFICIENCY

From the arrival of the sugar beet at the factory's reception point to the sugar granules, the processes in place make full use of the raw material. This is done through the production of valuable products that arise from sugar production and the minimisation of waste as far as possible.

1.1 CO-PRODUCTION

CASE STUDY: SUGAR FACTORY LIME (SFL)

Besides its use as a fertiliser, SFL has other uses. It can be used for mushroom cultivation and also for desulphurisation of flue gases from the boiler houses / pulp dryers.

GOOD PRACTICE	DESCRIPTION
Products – Beet pulp and molasses	Beet pulp, a fibrous product containing water, is separated from the solution containing sugar (at an approximate concentration of 15%) during the diffusion process. On average, 50 kg (dry matter) of beet pulp is produced per tonne of beet. Due to its high energy content, beet pulp is used as feed. Pulp is generally dried to produce beet pulp pellets. In some cases, notably when there is local demand for fresh animal feed, the factory can provide the more perishable 'fresh' pressed pulp. The latter is, most often, the result of pressing the cossettes in order to obtain a product with up to 25% dry matter to be ensiled (stored) by the farmer or to be consumed directly by the animals. In many countries, beet pulp is highly valued by beet growers, who take it back to their farms during the processing season. In many cases, beet pulp is transported in the otherwise empty beet lorries returning from the factory, optimising transport costs. Beet pulp can also be used as a raw material to produce renewable energy (biogas). The digestate from biogas production can be further used in agriculture as a fertiliser. Molasses constitutes the remaining syrup from the crystallisation stage (approximately 50kg/tonne of beet) and is used in a variety of market applications.
Products – Sugar factory lime	Sugar factory lime (SFL) emerges when the raw juice is purified by continuously adding milk of lime and the carbon dioxide from the lime kilns to precipitate most of the non-sugars. Essentially, non-sugars are pectin substances as well as some proteins. After filtration, the product may be taken to presses or rotary drum filters to increase its dry matter content and recover sugar, if possible. The resulting product containing calcium carbonate and no sugars is SFL. Its high calcium carbonate content makes SFL a good material for use as a fertiliser/conditioner to improve soil structure and reduce soil acidity. SFL also contains other useful nutrients for agricultural soil such as magnesium, phosphates and nitrogen. SFL is therefore used as a fertiliser directly on the field or for other uses such as mushroom cultivation. In addition, SFL can be used for desulphurisation of flue gases.

1.2 CLOSED-LOOP (MATERIAL CYCLES)

EXAMPLE: BIOGAS, NETHERLANDS

Beet leaves and tails are energy rich and can be used in rural biogas factories. In the Netherlands a biomass digester was opened in 2011 near the sugar factory in Dinteloord. The biomass digester processes beet leaves and tails from the sugar production process but also residues from other production processes such as potato peelings, chicory pulp and vegetable cuttings. The biogas produced from the fermentation process is then upgraded to natural gas before being fed to the public gas network.

GOOD PRACTICE	DESCRIPTION
Use of beet leaves, beet tails and weeds	Beet leaves and tails (and weeds) are re-used as energy-rich and easily digestible feed for ruminants or as compost that can be a useful soil conditioner. In certain countries, tails and beet parts (as well as weeds) are also used in rural biogas factories as biomass substrate for co-fermentation.
Use of agricultural soil	Sugar beets are often pre-cleaned in the field. This allows their processing to commence in the factory without delays but also helps conserve the organic matter and structure of the soil in the fields. In the event that some non-beet materials, primarily stones and soil, arrive at the factory with beets, they are either returned to the field or used in other industries, contributing to waste minimisation. The soil can be also used by the factory as construction material for water lagoons and soil ponds. Another use is in building development as a landscaping material (e.g. for embankments) or for sports field applications. Stones are used in road building and in the construction industry.

1.3 RAW MATERIAL EFFICIENCY (AVOIDING LOSSES)

EXAMPLE: SUGAR SYRUP STORAGE, BRITISH SUGAR, UK

In the UK, a process for syrup storage has been put in place using large air conditioned tanks, processing only a proportion of the crop to crystal sugar immediately and storing the remaining syrup for further processing during the summer months. Some of the residual beet sugar syrup is also used to produce over 50,000 tonnes of bioethanol each year.

GOOD PRACTICE	DESCRIPTION
Gentle handling of sugar beet from reception to processing	The method of physically handling the beet can have a significant effect on sugar losses. Beets are stored in the factory for the shortest time possible to minimise sugar losses (e.g. rotting). Once delivered to the factories, unloading the vehicles with the least possible damage to the beet helps minimise sugar losses. Sugar beet can be transported either via conveyor belts or water channels into the beet washing unit. The selection of the method is heavily influenced by local weather conditions and circumstances.
Storage of thick sugar syrup (or 'thick juice')	Thick juice is the result of multiple evaporations in the evaporation station, constituting syrup with around 70% dry matter. The syrup is viscous, golden yellow and clear. Depending on the circumstances (beet quantities, surplus sugar) not all thick juice is crystallised. The thick juice is stored and can be processed into sugar or in some cases used for ethanol production after the beet processing campaign.

2. LOCAL IMPACTS

Local impacts are a key focus area for sugar factories. Due to the urbanisation of many rural communities and the expansion of residential areas, sugar factories today are often located closer to populated areas (generally towns and some small cities). Sugar companies are committed to maintaining good relations with their staff and residents living near their factories, by complying with strict environmental protection requirements. This necessitates investment to prevent unwanted noise, odour and dust emissions.

The EU sugar industry constantly works with local partners (e.g. local authorities, rural communities, transport companies) to optimise transport and logistics, with the aim of reducing environmental impacts (e.g. searching for the best combination of transport distance, lorry weight and loads, use of rail transport). Sugar beet are perishable and progressively lose sugar from the moment they are harvested. Moreover, sugar beet contain around 75% water, which represents the largest part of the approximately 100 million tonnes of beet transported and processed by the EU beet sugar industry every year during the processing campaign. To reduce the economic and environmental impact of sugar beet transport, beet sugar factories in Europe have, for more than 200 years, been located close to the beet fields, mostly in rural areas. Despite the restructuring of the industry and the associated factory closures, the local processing of the raw material remains a characteristic and, from an environmental perspective, positive feature of the EU sugar industry. The EU sugar industry ensures that more than 14 million tonnes of sugar do not have to be transported over long distances to supply the EU market, but can be produced locally. EU sugar thus ranks amongst those food materials which are not only produced in an environmentally sound manner but are also – from the point of view of avoiding unnecessary transport – produced and marketed close to the consumer.

2.1 REDUCTION OF DUST, ODOUR & NOISE

EXAMPLE: PREVENTION OF ODOURS, NETHERLANDS

In the Netherlands Suiker Unie raised the height of the cooling tower, one of the sources of odour during the sugar production process in order to reduce the inconvenience to local residents. All complaints are recorded and investigated thoroughly.

EXAMPLE: REDUCTION OF NOISE, NETHERLANDS

To reduce noise pollution, the housing of the beet conveyor belt was re-insulated in 2011 in Dinteloord. The beets are now conveyed to the washing house almost silently. Suiker Unie has also built embankments between its factory site and the nearby village of Stampersgat. The embankments absorb sound, hide a large part of the factory from sight, and are also designed to fit into the landscape.

GOOD PRACTICE	DESCRIPTION
Use of filters in boiler houses and pulp dryers	Boiler houses and pulp dryers emit fumes called flue gases. When not treated properly, flue gases can also contain dust which can spread to the surrounding areas, causing respiratory problems. To prevent this, dust is retained within the boiler houses using fabric filters. In the case of the pulp dryers, the flue gases are stickier; hence, multi cyclones are used to separate the dry pulp particles and the moist gases. Filter cloths are also used in other parts of the factory to remove dust particles from air vents (e.g. in the sugar dryers, in silos).
Prevention of odours	Odour emissions from sugar plants are normally caused during the operation of the pulp driers as well as from the presence of organic matter (e.g. leaves, soil) in the wastewater treatment system and the soil ponds. Process optimisation is carried out to reduce unpleasant odours to an appropriate level, using two main types of measures: • Controlling the outflow of the beet washing system and removing vegetable matter from the wash water prevents odour generation. Other methods are monitoring Chemical Oxygen Demand (COD) levels and maintaining adequate pH levels of the process water. • Emission levels are reduced by the installation of vents in the chimneys and/or increasing their height.
Reduction of noise emissions	Where factories are located near housing, steps are taken to reduce excessive noise, such as improving insulation and installing embankments around the factories.

2.2 VEHICLES & TRAFFIC MANAGEMENT

GOOD PRACTICE	DESCRIPTION
Larger vehicles & cleaner beet	In recent years, rationalisation pressures within the sugar industry have led to the closure of many factories in the EU. This has meant that in some regions sugar beet tend to be transported over longer distances. However this has been balanced by the fact that the sugar industry has pursued a policy of transport rationalisation to reduce the environmental effects of beet transport. Beet farmers are encouraged, through targeted information and various handling improvements made in the factories, to deliver cleaner beet in larger vehicles.
Traffic management	To reduce the traffic burden on the roads surrounding the factories, several measures have been introduced. These include the establishment of washing installations for the beet vehicles at the factory site and the creation of special access routes to the factory.

3. WATER EFFICIENCY & PROTECTION

Beet sugar factories are net water producers. The most important source of water in the factories is the sugar beet itself; it contains around 75% water, most of which is turned into steam during the production process, then condensed and recycled several times. The condensate is used for beet transport and washing water, as well as for extraction and crystallisation. This enables the sugar factory to reduce fresh water use to a minimum. Water from pressing the exhausted pulp is also recycled. Thus, the processing of beet and the extraction of sugar require minimal fresh water, but also avoid producing wastewater from the pulp pressing.

In factories, biological water treatment methods are used to purify wastewater so it can be returned safely to the environment. Water quality, sewerage pipes and flood risks are monitored on site to prevent accidental releases into the environment.

3.1 REDUCTION OF FRESH WATER DEMAND

EXAMPLE: WATER RECYCLING, BRITISH SUGAR, UK

In the UK British Sugar's Cantley factory abstracts water under licence from three sources: potable water, borehole water and river water. In 2011, the factory used 38,000m^3 of river water, abstracted from the River Yare into a small reservoir, from where it was pumped to the factory for cooling purposes. A pond nearby was filled with process condensate awaiting permitted discharge to the river. A small project team examined the feasibility of using this cooled condensate to replace river water, which resulted in installing a pipeline. A condensate pump feeds the cooled condensate via the original system in the factory. River water is no longer used for cooling.

EXAMPLE: WATER AUDITS, BRITISH SUGAR, UK

Independent water audits are regularly carried out to review consumption against agreed improvement targets, whilst seeking opportunities for recycling. In the UK the audits use processing mapping in order to identify where water is used on site, assessing the quality requirement for each use e.g. drinking water quality which is matched against the type of water currently in use for that use. Priority is given to the use of a recycled water resource against a fresh water resource. Effluent water is treated onsite before discharge and quality levels are controlled by the Environment Agency.

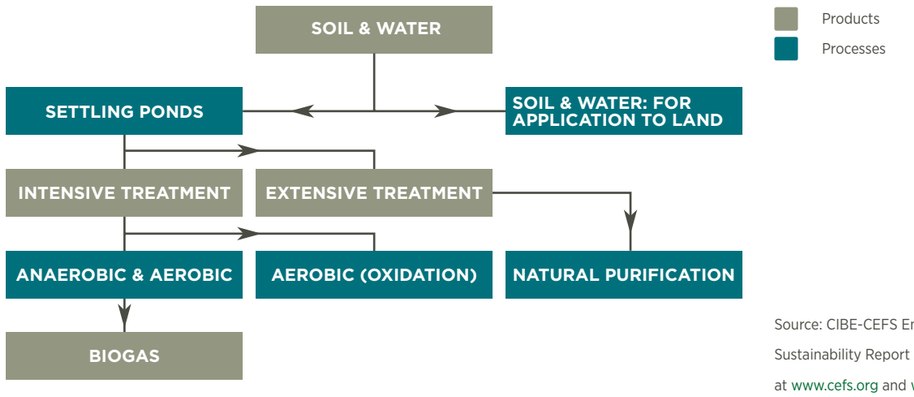
GOOD PRACTICE	DESCRIPTION
Recycling of process water	The most important source of water in the factories is the sugar beet itself as it contains 75% water. Up to 90% of the water used during processing originates from the sugar beet itself. The water contained in the sugar beet is turned into steam during the beet washing, diffusion/extraction, multi-stage evaporation process, purification and crystallisation. The majority of this steam is condensed instead of being discarded as wastewater. The condensate is recycled several times as it is used for beet transport, washing water and also for extraction and crystallisation. Sugar factories therefore require a limited amount of fresh water (groundwater and non-potable tap water) which is mainly used for cooling purposes. Drinking water is only used for a few specific purposes, including staff facilities.
Use of water from pressing the beet pulp	The water from pressing the pulp is recovered and reintroduced into the diffuser so that it can contribute once more to the extraction process.
Operating water cycles for beet washing and condensation	Approximately half of the water extracted from the sugar beet is evaporated from the site or incorporated in the various product streams. The remaining water is used in operating water cycles for beet washing and condensation in a closed circuit. Another closed circuit is the washing water and flume water circuit that is fed by condensate or pulp press water coming from the sugar beet. Moreover, the water used in the sugar extraction process is condensed and recovered to be used in the evaporation and crystallisation.

3.2 PREVENTING WATER POLLUTION

EXAMPLE: BIOLOGICAL WATER TREATMENT, SUGAR FACTORIES

Below is a schematic diagram showing the stages of biological water treatment in sugar factories. The individual components of a beet sugar factory water treatment system vary from factory to factory but generally consist of soil settlement ponds and a biological treatment plant. In the Southern European countries, due to higher temperatures, treatments can take place in open lagoons.

DIAGRAM 4: SCHEMATIC PRESENTATION OF WATER TREATMENT



Source: CIBE-CEFS Environmental Sustainability Report (2010), available at www.cefs.org and www.cibe-europe.eu

GOOD PRACTICE	DESCRIPTION
Use of biological water treatment systems	Biological water treatment reduces the organic load of the water so that it can be returned to watercourses without adverse environmental impacts. The sugar industry uses intensive treatment plants combining anaerobic and aerobic systems. Effluent water is usually first sent to soil settlement ponds to allow for the organic matter to settle at the bottom of the pond (i.e. sedimentation). During this storage time, naturally occurring bacteria reduce the Biochemical Oxygen Demand (BOD) of the water, resulting in its purification. Anaerobic systems are then used to treat high concentrations of BOD. This reduces the time effluent water needs to be stored for, thus reducing odour formation. After anaerobic treatment, the water is fed to an aerobic plant where nitrogen is eliminated. Both treatments allow the treated water to be directed to local watercourses with complete safety. The water treatment systems fulfill legal requirements while also complying with local quality standards.
Protection from leakage or accidental discharge of pollutants	As with many other industries, the sugar industry uses fuel, chemicals and lubricants. Although these products are environmentally hazardous, they are also essential for the production of sugar in order to operate machinery (e.g. lime kilns, pulp dryers). Therefore, protective measures are in place to prevent potential leakage (e.g. from the fuel storage tank) and discharge of pollutants to watercourses. A registry of environmentally hazardous substances is kept on site. All hazardous substances are identified, documented and accompanied by their Material Safety Data Sheets. Each substance is stored to protect it from the elements (e.g. humidity, extreme heat) with retention volumes adapted to the needs of the site. For example, fuels can be kept in sealed fuel tanks with a capacity to match the factory's demand. Staff in charge of handling these substances receive training on how to load, unload, store and transport such products. Training is also essential to raise awareness on the pollution risks and on how to carry out the emergency procedures to control the leakage/discharge of pollutants (e.g. oil spill).
Surveillance of effluent discharged to watercourses	The use of biological treatment systems for effluent water is only one step of pollution prevention. Even after the treatment, the levels of remaining pollutants (BOD, COD, suspended solids, nitrogen, phosphorous etc.) are monitored so as not to exceed limits that would lead to pollution of watercourses. As bad sewerage (pipes) can also lead to leakage, equipment is maintained regularly to repair damages and thus prevent potential leakage.
Flooding measures	For factories situated near watercourses with a potential of flooding during peak rainfall months, precautionary measures are in place against risk of inundation. These measures are essential to prevent water pollution as excess water volumes can cause wastewater treatment plants as well as ponds to overflow.
Containment of water used for fire extinction	Each site has an emergency plan in case of fire and potential explosions. Part of this emergency plan covers the containment of water for fire extinction in several locations prone to fire.

4. ENERGY USE

Energy is used throughout sugar manufacturing to extract the sugar from the beets during the diffusion process, during multi-effect evaporation and crystallisation. Moreover, the drying of beet pulp also requires a significant amount of energy. The sugar industry constantly aims to minimise primary energy use in order to remain competitive.

4.1 ENERGY EFFICIENCY

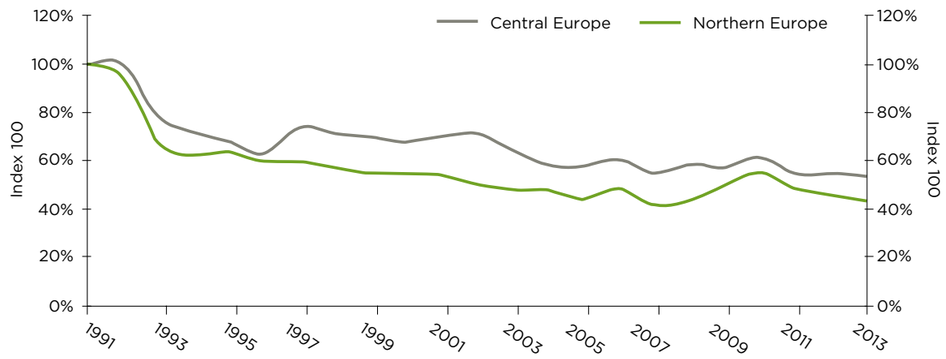
EXAMPLE: ENERGY EFFICIENCY, NETHERLANDS

Energy efficient equipment used in the Netherlands includes high efficiency motors, variable speed drives and energy efficient lighting systems such as LED lighting.

EXAMPLE: REDUCTION IN ENERGY CONSUMPTION, CENTRAL, NORTHERN & EASTERN EUROPE

Energy consumption has been cut by 40% since 1990 in the sugar factories of the Nordzucker Group in Central, Northern and Eastern Europe.

DIAGRAM 5: EVOLUTION OF CO_2 EMISSIONS PER TONNE OF SUGAR IN CENTRAL (CE) AND NORTHERN (NE) EUROPE



INDEX 100% = 1991, Source: CEFS

GOOD PRACTICE	DESCRIPTION
Use of multi-effect evaporation	After purification, 'thin' sugar juice has 15% sugar content. This requires concentration to above 68% to allow for crystallisation and extraction. Sugar factories therefore use a process called 'multi-effect evaporation'. This technique is based on the re-use of heat energy contained in the steam after each evaporation stage. This heat energy is carried over to the next evaporator where it is used again, thus avoiding the need to produce additional steam for each evaporation stage and burning more fuel. In the case of a five-stage evaporation process, 1 kg of steam evaporates 5 kg of water from the juice.
Re-use of condensate from evaporation and heat recovery systems	Hot condensate produced in the first evaporator is fed back to the boiler to produce more steam. Condensate and vapours from each evaporator can therefore be used for other heating purposes, including crystallisation of the sugar and heating the sugar beet slices. The final condensate from the evaporation process is also passed through heat recovery systems, such as heating wastewater for anaerobic digestion.
Use of energy management techniques	Energy consumption is further minimised by using energy efficient equipment and customising the design of the sugar plant to fit the production capacity. These techniques differ according to local conditions and the production capacity of the factory as well as its setup (e.g. type of dryers used).
Increasing the efficiency of pulp pressing	Once the sugar has been extracted from the sugar beet slices, the pulp has to be pressed to remove the excess water from its fibres, while also recycling the small amount of sugar it still contains. The sugar industry has invested in the pressing technique in order to improve the efficiency of the pressing process, to save fuel needed for pulp drying as well as to improve overall product quality. Mechanical pressing of the pulp can reduce the amount of water requiring evaporation by almost 60%.
Increasing the efficiency of pulp drying	As mentioned before in "Resource Efficiency-Circular Economy", the pressed pulp is often dried to produce beet pulp pellets. These are sold as high quality animal feed. Beet pulp can be dried using a variety of techniques (e.g. steam, high temperature drying (HTD)). In the Southern European countries, due to the frequency of sunshine, the pulp is dried using solar energy. The efficiency of pulp drying is increased by recycling the gases produced from the dryers but also using gases from the on-site combustion plants for pulp drying.

4.2 REDUCED CARBON EMISSIONS

EXAMPLE: BIOGAS, NORDZUCKER, GERMANY

Some factories use renewable biogas fuel from on-site wastewater treatment or fermentation to power operations. Biogas generated in the anaerobic wastewater treatment plants is burned in the boilers and driers, reducing the use of fossil fuels. Further examples of such optimisation activities involving the use of biogas include:

- Installation of biogas burners in existing boilers
- Installation of anaerobic digesters in plants that previously did not have anaerobic treatment
- Drying of biogas before transportation to the boiler house, avoiding condensation in the pipes

EXAMPLE: COMBINED HEAT & POWER, BRITISH SUGAR, UK

Energy use is minimised by the use of combined heat and power systems (CHP) in factories and heat recovery. CHP plants have been installed in all of British Sugar's manufacturing sites. The plants produce high pressure steam, which drives a turbine to generate over 95% of the processor's electricity requirements. In addition, the industry exports a further 700,000 MWh of electricity for use in the local power network – enough to provide electricity for 220,000 homes per year.

GOOD PRACTICE	DESCRIPTION
Reduction of fossil fuel use	The sugar industry constantly aims to minimise primary energy usage (i.e use of fossil fuels) in order to remain competitive (see section 4.1). The reduction of fossil fuel use combined with the use of alternative energy efficient technologies results in a reduction in greenhouse gas emissions (GHG). The sugar industry thus contributes to achieving a low-carbon EU economy.
Use of renewable energy in biogas from on-site wastewater treatment or fermentation	As mentioned in "Resource Efficiency", biogas is produced using two main systems: • Fermentation of biomass (e.g. beet pulp, tops and tails) • Anaerobic digesters for treating wastewater In the latter, methane gas is produced in the anaerobic process. This type of biogas resulting from wastewater treatment is normally used in site boilers or pulp driers during the campaign, reducing the need for fossil fuel. If other local fermentable waste is available, the surplus biogas is fed into the regional/national natural gas grid all year round.
Use of Combined Heat and Power Systems (CHP)	This power generation system produces both steam and electricity. Both are used in the sugar production process. Specifically, high pressure steam drives a turbine and generator to produce electricity needed to power the factory. The low pressure steam originating from the exhaust leaves the turbine only to be used in order to heat the sugar juice throughout the process (i.e. evaporation, crystallisation). The efficiency of CHP plants can reach 85%, which means 85% of the energy in the fuel is used. This means sugar factories produce the majority of their electrical requirements. Moreover, surplus electricity and/or heat is exported to the grid or sold to electricity/heat supply companies.

ANNEX B1
RELEVANT EU LEGISLATION

GOOD PRACTICE	DESCRIPTION
Resource efficiency: co-production	A resource-efficient Europe Flagship initiative of the Europe strategy for 2020 supports the shift towards a resource-efficient, low-carbon economy to achieve sustainable growth. Directive 2008/98/EC Waste Framework Directive Article 5: includes a definition of by-products and the main conditions which must be met by a substance or object to be classified as a by-product. Commission Regulation (EU) No 463/2013 of 17 May 2013 amending Regulation (EC) No 2003/2003 of the European Parliament and of the Council relating to fertilisers for the purposes of adapting Annexes I, II and IV thereto to technical progress.
Resource efficiency: material cycles	A resource-efficient Europe Flagship initiative of the Europe strategy for 2020 supports the shift towards a resource-efficient, low carbon economy to achieve sustainable growth. Directive 2008/98/EC Waste Framework Directive Article 5: includes a definition of by-products and the main conditions which must be met by a substance or object to be classified as a by-product.
Local impacts	Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
Water efficiency	The Water Framework Directive (Directive 2000/60/EC) is a European Union directive which commits European Union member states to achieve good qualitative and quantitative status of all water bodies.
Water protection	The Water Framework Directive (Directive 2000/60/EC) is a European Union directive which commits European Union member states to achieve good qualitative and quantitative status of all water bodies. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).
Energy Use: efficiency & carbon emissions	The Energy Efficiency Directive (EED) (Directive 2012/27/EU) entered into force on 4 December 2012 and repeals the Cogeneration Directive (2004/8/EC) and the Energy End-Use Efficiency and Energy Services Directive (2006/32/EC). This coalition Directive aims to achieve the three targets set by the European Union to be reached by 2020: a 20% reduction in greenhouse gas emissions, 20% of energy derived from renewables and a 20% increase in energy efficiency. Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).

GOOD PRACTICES:

PART C – SOCIAL PRACTICES (AGRICULTURE & PROCESSING)

Good social practices apply to both the farming and processing steps of the beet sugar chain and are based on the eight core categories of the Corporate Social Responsibility Code of Conduct agreed by the European Committee of Sugar Manufacturers (CEFS) and the European Federation of Trade Unions in the Food, Agriculture and Tourism sectors (EFFAT). The Code of Conduct was launched in 2003 and came into effect in 2004. A new category 'local economy' has been added in the Good Practices. More information on the code can be found http://www.eurosugar.org/en/csr_1.html.

The good social practices cover the following main topics:

1. LABOUR RELATIONS
   - 1.1 Labour relations
   - 1.2 Non-discrimination
   - 1.3 Effective social dialogue
   - 1.4 Social partners
2. EMPLOYMENT
   - 2.1 Contractual basis
   - 2.2 Fair pay
   - 2.3 Workplace conditions
   - 2.4 Restructuring
3. EDUCATION & TRAINING
   - 3.1 Job-related training
   - 3.2 Apprenticeships
4. OCCUPATIONAL HEALTH & SAFETY
   - 4.1 Procedures & policies
   - 4.2 Creating a culture of health & safety
   - 4.3 Training
5. STAKEHOLDER RELATIONS
   - 5.1 Business ethics
   - 5.2 Suppliers codes
   - 5.3 Customers and product transparency
   - 5.4 Local economy & communities

ANNEX C1 – FURTHER CASE STUDIES

1. LABOUR RELATIONS

Fundamental ILO Conventions are binding for all ILO member states even if they have not ratified the respective Conventions. All Member States of the European Union have ratified the eight fundamental ILO Conventions with respect to the right to association, the prohibition of forced or compulsory labour, the freedom of association, the right to organise and bargain collectively, equal remuneration rights for men and women, the abolition of forced labour, the prohibition of discrimination in respect of employment and occupation, the minimum age for admission to employment, and the prohibition and immediate action for the elimination of the worst forms of child labour.

Farms and sugar factories in the EU use no forced labour and no child labour as provided for under the ILO core conventions. The EU Beet and Sugar sector seeks to prevent all forms of discrimination and provides equal pay for equal work. The sector also works to improve its diversity and gender balance.

Worker representation is supported through a combination of formal consultation mechanisms with workers representatives and open lines of communication between employers and employees to enable workers to make their voices heard in practice. The task of workers representatives is facilitated by the employer and all forms of retaliation and discrimination against those representatives are prevented.

An EU-wide social dialogue committee has been established to enable joint projects, such as the CSR Code of Conduct for the sugar industry (www.eurosugar.org), to be implemented in practice.

1.1 LABOUR RELATIONS

EXAMPLE: INFORMATION AND CONSULTATION OF THE WORKS COUNCILS – AGRANA ZUCKER GROUP (AUSTRIA, CZECH REPUBLIC, HUNGARY, SLOVAKIA AND ROMANIA)

Agrana Zucker Group goes beyond the legal obligations and organises a one-week conference for the trade unions represented at the works council and includes the chairman of the youth council. Moreover the chairman of the works council can visit other production sites once a year during the campaign. The employers' representatives can compare problems and establish strategies with the trade unions concerning safety and consolidation of the social standards and the international visits permit a broader view of the company activities and tasks. The company pays for the loss of employee working time and travel costs.

EXAMPLE: COLLECTIVE AGREEMENTS FOR THE SUGAR SECTOR, FRANCE

Collective agreements for the sugar sector in France regarding equality of treatment in career development (translation into English of Article 4.101 of the national collective agreement for the sugar industry is shown below):

"The principle of non-discrimination is asserted. On this basis, any staff representative, regardless of the nature of his or her mandate, can simultaneously carry out his or her professional activities and his or her activities related to his or her trade union mandate.

As a consequence, belonging to a trade union or carrying out a trade union activity cannot be taken into consideration to decide upon, in particular, recruitment, conduct and distribution of work, training and career progression, remuneration and granting of social incentives, disciplinary measures and dismissal.

Likewise, if there exists at company level a system of individual appraisal related to career progression, each staff representative has the same right, as any other member of staff, to avail of this system under the same conditions and modalities. In order to facilitate and specify the application of these principles, in particular in the field of career progression for staff's representatives:

The professional activity and the mandate (s) of the staff representative cannot obstruct a normal career development. Only the time spent at work can undergo a professional appraisal with the objectives to assess the individual performances and to develop competences.

A staff representative can resume his or her full-time professional activity. If necessary, specific training will be offered, and if appropriate, long-term training. The remuneration of the concerned individual will be guaranteed in the framework of life-long training and adaptation and reduction of working hours."

GOOD PRACTICE	DESCRIPTION
Freedom of association, right to collective bargaining & no retaliation practices	Sugar companies and farmers respect the freedom of association and thus the right for all workers to establish and to affiliate to trade unions, including for workers representatives, the right of access to the enterprise (ILO convention 87). Sugar companies and farmers recognise the effective right to collective bargaining as well as the right for workers' representatives to be provided with facilities as appropriate in order to carry out their functions promptly and efficiently. (ILO conventions 98 and 135). Sugar companies and farmers confirm the fact that exercising the above rights will not cause any personal or professional damage to the workers and their representatives At national level, the representation of employees and collective bargaining apply in accordance with the legislation and often go beyond.
Effective representation of workers interests	Collective agreements signed at branch level set up minimum standards on employment and working conditions throughout the sector where they apply to all companies and workers. Such agreements can cover issues such as wages and other financial benefits, working time and holidays, health and safety, social protection, trade union rights, dismissals and redundancies, vocational training, job descriptions and profiles, etc. Agreements signed at company level respect these minimum standards and will refer to similar issues.

Collective bargaining agreements against discriminatory practices towards trade unions' representatives	EU sugar companies and, where applicable, farmers can adopt collective agreements in view of effectively ensuring that all union members and representatives are not discriminated with regard to aspects such as: • recruitment • work allocation • training • career development • pay This means, for instance, that the performance of a staff representative can only be assessed on the basis of the time spent on the job. Hence, if he or she dedicates a significant part of his/her working time to representation tasks it cannot be evaluated as if they had spent 100% of its time on their regular job. A former staff representative must be able to resume a full-time occupational activity and, if necessary, receive specific training to do so. Non-discrimination is generally part of legislation in EU countries and yet, companies can facilitate the effective implementation of the principle in the everyday life of companies by adopting concrete measures to prevent discriminatory practices towards trade unions' representatives.
No forced, compulsory or child labour	Sugar companies and farmers do not operate with any form of forced or compulsory labour (ILO Convention 29) Sugar companies and farmers oppose child labour (Convention 182) and meet ILO convention 138 in relation to the minimum age for admission to employment. ILO Convention 138 has been ratified by all EU Member States and a range of minimum age for admission to employment exists in the EU (generally 15 to 16) within the limits provided for in Article 7 of Convention 138 (ages 13 to 15). For cultural and socio-economic reasons, children under the age of 18 may help their parents with crop production on small family farms, as long as this remains within the conditions provided by ILO Convention 182 and/or national legislations. According to ILO Convention 138, such work should not be likely to be harmful to the health or development of these young workers nor should it prejudice their attendance at school, their participation in vocational orientation or training programmes or their capacity to benefit from the instruction.

1.2 NON-DISCRIMINATION

EXAMPLE: DIVERSITY CHARTER, NORDZUCKER AG, GERMANY

Nordzucker AG joined the German Diversity Charter, 'Charta der Vielfalt' in 2013. This is a diversity initiative which goes beyond legislation on non-discrimination and which provides an additional self-commitment to ensure diversity within the company.

EXAMPLE: EQUAL OPPORTUNITIES, AZUCARERA, SPAIN

Azucarera in Spain has committed to provide equal opportunities in the training, development and professional careers of its workers, taking into account at all times their individual skills and abilities. The company has created the position of "Equal Opportunities Officer" and developed an Equality Plan to ensure that this goal is achieved.

The company has also put in place strict policies and control measures regarding the non-tolerance of any type of sexual, mental or physical harassment. It has drawn up a harassment at work protocol, available to its employees, to prevent and avoid this type of conduct.

GOOD PRACTICE	DESCRIPTION
No discriminatory practices	Sugar companies and farmers are against all discrimination, be it based on ethnic or national origin, religion, sex, sexual orientation, affiliation to trade union, age or political affiliation. They undertake in particular to guarantee and promote equal opportunities and equal treatment for men and women (ILO conventions 100 and 111 – EU directives n° 76/207/EEC of 9.2.1976, n° 2000/43/EC of 29.06.2000 and n° 2000/78/EC of 27.11.2000).
Human resources policies	EU sugar companies can adopt a common human resources (HR) policy applicable to all employees irrespective of their geographical location within the EU or at least ensure that critical aspects (such as avoiding discriminatory practices) are aligned across different countries. Hence, both workers' and management's representatives are involved in the preparation of policies aiming, for instance, to ensure that recruitment and professional development are based on competence and not influenced by other discriminatory factors such as gender, nationality, race, religion etc. They can monitor these practices through periodical/annual reports discussed with union/staff representatives. A common HR policy focusing on non-discriminatory recruitment and professional advancement procedures applied across the company is a way to ensure equal and fair treatment of all employees, irrespective of geographical location.
Diversity charters	Diversity charters are among the latest in a series of voluntary initiatives aimed at encouraging companies to implement and develop diversity policies. A diversity charter consists of a short document voluntarily signed by a company or a public institution. It outlines the measures it will undertake to promote diversity and equal opportunities in the workplace, regardless of race or ethnic origin, sexual orientation, gender, age, disability and religion. The policies developed within companies adhering to a diversity charter recognise, understand and value people's similarities and differences as representing huge potential sources of innovation, problem-solving, customer focus, etc.
Monitoring and promoting the role of women in agriculture and in rural areas	A women's committee on the role and place of women in rural areas has been set up at EU level and is managed by COPA-COGECA to tackle the specific issues related to women in European agriculture. Its achievements so far have been to: • Progress in the evaluation of the repercussions on gender equality of policies and programmes towards the establishment of better detailed disaggregated gender statistics. • Require EU Institutions and Member States to include gender issues and promote gender equality. • Strengthen the role of women in practical and in legal terms notably by requiring facilitated access to credit for women in rural areas. (See microcredit systems to support entrepreneurial women in Europe in NL.)

1.3 EFFECTIVE SOCIAL DIALOGUE

EXAMPLE: DIALOGUE, AZUCARERA, SPAIN

Azucarera maintains its relationships with employees based on trust and transparent communication, through a policy of dialogue and active listening, as well as confidentiality. The company has had an Internal Communication and Commitment Management Department since April 2013, focusing on two principal lines of work: improvement in transparency and

increase in employees' commitment to the Mission, Vision and Values of the company. The actions taken to achieve these goals include, among others:

- Encouragement of two-way communication, through the creation of an internal newssheet
- Surveys among its employees to identify strengths and weaknesses in the company's work atmosphere.
- Thank-Recognise-Ask boxes are also installed to encourage the reporting and expressing of internal opinions.
- The company Chief Executive makes regular visits to the processing plants, where informal meetings are organised with employees to discuss any matters the employees consider important.

GOOD PRACTICE	DESCRIPTION
Representative organisations	A constructive social dialogue with the employee's representatives and trade unions at all levels is an important element for a successful functioning of enterprises. Informing and consulting the employee's representatives promotes confidence and cooperation between employees and employers. The European legislation on information and consultation is implemented in all companies.
Between employers and employees	Through works' councils or other forms of information and consultation, management and workers' representatives have a dialogue on issues such as the economic situation of the company and its perspectives for the future, the structure and evolution of employment, changes in work organisation or contracts. Ultimately, it also helps management to make decisions through exchange of views and ideas. This has positive consequences on the working climate. EU sugar companies can: • Facilitate the possibility for employees to submit comments, suggestions, and complaints directly (for example through letterboxes or dedicated e-mail addresses) or through their unions or representatives. • Promote a culture of dialogue through management training (see also Training). A good exchange between employers and employees through effective dialogue allows employers to compare the problems and establish strategies with the trade unions and/or workers' representatives concerning the consolidation of social standards and the improvement of employment and working conditions. In general terms it also improves the organisational performance through transparent and clear communication. This has positive consequences on the work climate. By jointly discussing problems and considering developments it also enhances the employees' performance and commitment.

1.4 SOCIAL PARTNERS

GOOD PRACTICE	DESCRIPTION
Agreements between social partners	When no standard exists, the social partners can conclude appropriate agreements. At least working conditions must be equivalent to those offered by comparable employers in the country concerned. Companies enter into collective negotiations with workers' representatives regarding improvements in non-salary elements of employees' working conditions. Those measures cover different fields such as: • Pension schemes that complement or increase minimum legal pension schemes. • Agreements setting an annual effective working time that is lower than the maximum legal (without affecting the salary). • Assessing motivation factors and general satisfaction among company personnel through regular sociological surveys on a long-term basis (e.g. every 3-4 years) that is made available to trade union representatives and all staff. The results of the survey are analysed and discussed in view of possible organisational changes such as changes at management level, definition of priorities, training activities, etc.

2. EMPLOYMENT

Workers' rights are protected through the use of formal, written documents that make their rights official. Contracts provide equal protection of seasonal workers as compared with permanent staff. Pay levels in the sugar industry meet or exceed local minimum wages and are enough to ensure that workers and their families have a decent standard of living as defined by the Universal Declaration of Human Rights (Article 23) and the ILO Tripartite Declaration.

2.1 CONTRACTUAL BASIS

GOOD PRACTICE	DESCRIPTION
Facilitating the understanding of contractual terms	The existence of a written document that formalises the link between the employer and the employee constitutes a further protection of workers' rights as the latter do not have to prove their relation to the company prior to any claim to their rights. In particular, sugar companies and farmers make sure that the contracts are sufficiently clear and concise for the worker to understand the terms of his/her employment. Agricultural workers are subject to the national statutory employment laws. A written contract of employment or a letter of engagement must, at least, include the 10 minimum elements described in the EU directive 91/533 from October 10, 1991 (i.e. identification of parties to the contract, place of work, position and work description, start and -if applicable- end date, paid leave, termination notice, remuneration, working hours and applicable collective agreements). During recruitment or as part of the induction programme of new employees, the company explains the content and meaning of the contract and the applicable collective agreement, if there is one. This allows for employers and employees to initiate their relation in confidence, both having a sufficient and common understanding of their contractual terms. It provides a common ground of understanding for all employees regardless of their previous knowledge about legal or contractual matters.
Ensuring that employment standards required by law are met in agriculture	Although seasonal work in EU beet growing is deemed to be not significant, EU farmers respect the conditions of entry, stay and work of third-country nationals for the purpose of seasonal work (Seasonal Workers Directive 2014/36/EU). Seasonal workers (migrant or not) in the sugar industry and in farming are entitled to equal treatment with national and permanent workers at least with regards to minimum working age, working conditions, including pay and dismissal, working hours, leave and holidays, health and safety requirements, unemployment and family benefits, tax benefits, education and vocational training, right to join trade unions, access to social security, pensions and training. In some EU countries, any individual or business that provides workers for agricultural work needs a specific licence which ensures that specific standards such as health and safety, accommodation, pay, transport and training are met.

2.2 FAIR PAY

EXAMPLE: PROFIT SHARING, FRANCE AND EUROPE

The French sugar sector has put in place a collective agreement to share profits with employees and creating additional incentives/bonuses. The amounts shared with employees are published every year in a report to the social partners. Similar voluntary profit-sharing arrangements agreed with employees exist in different sugar companies in many European countries (e.g. The Netherlands, Italy, Spain, Germany, Austria, Hungary, Slovakia, etc.).

EXAMPLE: NORDZUCKER, GERMANY

After the creation of the Nordzucker Group, there were different requests for specific payments and for a company pension scheme among the employees from previous companies. Specific payments were allocated in relation to profit sharing depending on company results. A specific pension scheme was implemented depending on the annual wage of each employee. Profit sharing increases employees' motivation and satisfaction.

GOOD PRACTICE	DESCRIPTION
Living wage	Pay levels in the sugar industry meet or exceed the minimum rates provided for by branch or industry collective agreements and/or legal provisions. When no agreement or pay scale exists, wages are enough to ensure that workers and their families have a decent standard of living as defined by the Universal Declaration of Human Rights (Article 23) and the ILO Tripartite Declaration.
Remuneration packages and profit-sharing	Sugar companies have in place attractive incentives, such as: • Providing a decent living wage which, in most cases, through collective agreements will exceed the national legal minimum wage. • In some companies, allocating to all employees a bonus pro rata to the benefits made by the company. • In other companies, setting up a specific company pension scheme to reduce the difference between wage and pension. Such initiatives help to recruit and retain workers by improving living conditions and enhancing workers' recognition and motivation. The average career duration in the European sugar industry is particularly high (20+ years in many countries) and the employee turnover quite low.
Equal pay for equal work	In order to avoid any discrimination, the sugar industry recognises the right for employees working under similar conditions to get equal pay for equal work (ILO Convention 100, EU Treaty 141, Directive 2000/78/EC). Companies make sure that leased/outsourced workers are guaranteed minimum wages and adequate working conditions. They can do so in different ways such as: • Include those conditions as part of the contract with the third party contractor. • Conducting audits and verifications on those third parties. • Establish Codes of Conduct that require living wages and decent working conditions for all the company suppliers. (See also Section 1.2 regarding non-discrimination)

Agricultural pay & skills	Beet growing, harvesting and delivery have evolved significantly during the past 50 years. They now necessitate little manual work but instead qualified farmers and skilled jobs in rural areas: qualified agricultural workers, machine drivers, agronomists, experts, scientists and academic researchers. Together, the national beet technical institutes in the EU employ and involve around 150 highly qualified technicians and scientists.

2.3 WORKPLACE CONDITIONS

EXAMPLE: FLEXIBLE WORKING & PROGRESSIVE RETIREMENT, SUIKER UNIE (THE NETHERLANDS AND GERMANY)

In the area of flexible working hours and progressive retirement policies, Suiker Unie company policies provide the following measures:

- No obligation to work overtime for employees of 55 years and older.
- An extra day off at the age of 55, 60, 61 and older.
- At the age of 58 and older it is possible to work less per year: 16 hours less at the age 58, 32 hours at the age of 59 and 64 hours aged 60 and older.
- A special arrangement for employees aged 58 and older. It involves working 80%, receiving salary for 90% and company pension for 100%. (Due to the increasingly longer retirement age and longevity, the company is looking together with workers' representatives for adjustments to this arrangement so as to make it economically sustainable in the longer term).

GOOD PRACTICE	DESCRIPTION
Working time	The European Sugar Industry meets the European legislation covering working conditions and complies with branch or industry standards on working hours. As far as working time during the processing season is concerned, special agreements are concluded between employers and workers' representatives and/or with the Public Authorities. Usually, either by laws or by private agreements, an overtime bonus is paid for overtime.
Older employees	Older employees (55 years old or over) have the opportunity of a smooth transition to retirement through adaptations in their working time/conditions such as: • Having the possibility to reduce their night shifts during the processing season. • Being able to be moved to other, less physically demanding positions. • Being allowed to benefit from part-time employment in the years prior to retirement while keeping a large portion of their remuneration and pension benefits. EU factories operate in the context of a rapidly ageing population. Improving the working conditions of older workers facilitates their work and integration in the company until late in their career while benefiting the company by retaining qualified and knowledgeable workers who would otherwise tend to exit the labour market.

2.4 RESTRUCTURING

EXAMPLE: SUPPORT FOR NEW ECONOMIC ACTIVITIES, AZUCARERA EBRO, SPAIN

Support for new economic activities for employees losing their job in case of factory closure (sugar market reform 2006-2009). The factory workers could propose projects of enterprise creation if a factory was to close down. Such projects could also be promoted through agreements between local authorities and the sugar company. This project comes on top of the employment restructuring plan (including relocation of workers, pre-retirement and worker compensation plans) that sugar companies must establish when closing down a factory. If the workers' project for enterprise creation is accepted the project can use the premises of a closed factory for 5 years at a moderate rent. It is also possible to assign machinery to the new enterprise.

EXAMPLE: INFORMATION AND CONSULTATION, ITALY

Entering into social dialogue to ensure employment of labour force after quota renunciations and factory closures. The restructuring process consequent to the OCM reform involved all the sugar companies in Italy. In the first wave (2006), 13 out of 19 factories were closed. After that, in 2008/09, two more factories were closed (total 15 out of 19).

Through a very deep and intensive social dialogue involving employers, trade unions, local and national authorities and growers' associations, the Italian companies tried to develop alternative projects (biofuel, energy, etc.) to employ most of the people affected by the closures. A first national agreement was signed in February 2006 between UnionZucchero (the national Association representing the Italian Sugar Companies) and national and local trade unions to guarantee employment, also giving them additional financial support (on top of the public social benefits). A second national agreement was signed in 2007 to confirm the first and to increase the financial support given to the employees. By the agreements reached between UnionZucchero and trade unions, collective dismissals involved only older retiring workers and volunteers financially encouraged. In the meantime, several local agreements were signed to specify how, where and when the new industrial activities intended to employ the remaining workers would start.

GOOD PRACTICE	DESCRIPTION
Information & consultation	European and national social dialogues in the sugar industry meet or exceed the national and European legislation on information and consultation. Since an open dialogue between management and employees is a pre-requisite for a climate of mutual respect and confidence, employees and their representatives are regularly kept informed of the situation of the enterprise as well as notified and consulted on planned restructuring measures in due time.
Facilitating the effective representation of workers interests in companies' decisions in times of change	EU sugar companies can in particular: • Involve trade unions and workers' representatives in development and implementation of alternative activities on site, with the objective of a long-term strategy that aims to ensure and strengthen the long-term sustainability and competitiveness of the company. • Involve trade unions and workers' representatives in the development and roll-out of training programmes for employees, with the objective of strengthening the skills and competences of their workers, thus increasing their employability and their internal and external mobility. Through works councils or other forms of information and consultation, management and workers' representatives have a dialogue on issues such as the economic situation of the company and its perspectives for the future, the structure and evolution of employment, changes in work organisation or contracts. This has positive effects on the work climate.

Employability of sugar industry employees	In case of restructuring, as well as in the event of investments having a social impact as provided for by the EU Sugar Industry CSR Code of Conduct, the sugar industry acts in a socially responsible way. Steps are taken to improve the employability of employees, in particular in cases of restructuring. Acknowledging that employees in the sector can no longer be guaranteed long-term employment in the same company, the EU sugar sector takes individual and collective measures to increase the employability of employees in the sector. That good practice takes several forms: • Undertaking EU/national sector-wide analysis of the skills required in the sugar industry, the skills that are likely to develop and the skills common to different trades. • Identifying good employability practices both within and outside the sugar industry, along with success factors. • Gathering information on possible sources of funding for projects at European and/or national level. In case of restructuring or reconversion of activities, but not exclusively, companies can also: • Set up adequate structures (e.g. training centres) or contract services with existing ones to provide the best training or retraining possibilities for employees so as to optimise their chances of returning to the labour market. • (In case of reconversion of activities) Companies promote the possibility for employees who lost their jobs due to sugar factory closure(s) to find a job in the new activities after the reconversion of activities. • Employees working on the site to be closed are offered the possibility of redeployment to other factories/positions within the same sugar group or to other companies. • Employees having a project to start their own business can receive support from the company to do so. Support can take several forms such as funding, subsidised renting of facilities or machinery/tools.
Supporting local development	In particular in case of restructuring, the factory will take all the necessary initiatives to support local development. These activities can take many different forms such as supporting company networks, business parks, the use of land and facilities of closed factories for new businesses or helping to develop specific local, regional or national competencies. This is important as sugar factories are located in the EU's rural areas and are a major source of local employment and related economic activities, whereas alternative manufacturing industry jobs are rather limited. The closure of a sugar factory can have a sudden economic impact on the rural area(s) concerned beyond the loss of jobs for the factory workers.

3. EDUCATION, VOCATIONAL & LIFE LONG TRAINING

Sugar companies give specific training to employees. This covers technical aspects connected with the production process and the field of health and safety at the workplace, as well as all other relevant aspects connected with the enterprise.

Education and training constitute an integral part of the social dialogue in the companies. They can be subject to collective bargaining and/or consultation with the employees and their representatives. These can present their proposals which will be discussed and, eventually, be implemented in accordance with national practices and procedures.

In association with national farmers' associations, members of COPA and GEOPA, European beet growers endorse the European agreement on vocational training in agriculture dedicated to agricultural workers (2002).

3.1 JOB-RELATED TRAINING

EXAMPLE: PROFESSIONAL CERTIFICATION OF SKILLS, FRANCE

A professional qualification certificate (CQP) as a packing machine operator in the sugar industry through national collective bargaining. This certificate has been recognised and shared by other branches of the food sector. The professional qualification certificates were awarded for the first time in 2003 and have continued ever since.

Employees from all packing sites in France receive training. The certificate is also applicable to all other branches of the food industry that have packing operations, which offers additional retraining opportunities to employees holding this certificate. The programme has a very high rate of trainees (close to 100%) qualifying for the certificate.

GOOD PRACTICE	DESCRIPTION
Training leading to a professional certification of skills	Companies providing an accreditation of certain professional skills increase the future employability of workers.
Leadership and conflict management	Training of managers on leadership and conflict management can result in better communication between staff and improved handling of conflicts. Ultimately this can lead to reduced stress levels, better staff performance and reduced absenteeism. Training cover one or several of the following areas: • Communication and conflict management. • Leadership training for current and potential managers. • Conciliation of work and family life.

Technical beet institutes	European beet growers' associations, in cooperation with technical beet institutes, organise regular technical and economic knowledge transfer sessions on beet growing issues so as to support effective transfer of good practices and innovation. The strong and close engagement and cooperation between farmers and processors has lead over the years to the development of actions, tools, measures, training and recommendations so as to improve technology transfer, information transfer and adoption of good agricultural practices. No fewer than 14 technical beet institutes in the EU and Switzerland are dedicated to these objectives and develop communication tools, training programmes, open days, conferences and seminars, e-tools to support, train, exchange and also get feedback from growers. The technical institutes are jointly funded by processors and growers. The list of the technical institutes can be found in the Annex C1: Additional Case Studies.
Young beet growers	In some EU countries (e.g. NL, UK), beet growers' associations organise specific initiatives dedicated to young farmers and workers to provide insight and understanding of all aspects of the sugar sector. These programmes are aimed at younger farmers coming into the sector or who will be returning to work on or manage farms in the future. Additionally, sugar companies' staff such as area managers and operational staff from their factories may be involved to ensure knowledge transfer from all parts of the sector.

3.2 APPRENTICESHIPS

EXAMPLE: SOCIO-DEMOGRAPHIC STUDY OF THE SUGAR SECTOR, EUROPE

In February 2015 the Social Partners formally adopted a landmark study developed across 2013 and 2014, *'Socio-demographic analysis of the European Sugar Sector: challenges and opportunities for successful succession planning, youth employment and better health at work'*.

Over the past 10 years, the EU sugar sector has been particularly hit by a massive wave of restructurings, leading to the closure of almost half of its factories and to the loss of half of its workforce. Partly as a result of that process, the current sugar workforce in Europe is particularly old in comparison with the rest of the Food and Drink industry and the economy as a whole. The sector also suffers from the handicap of being a highly technical sector located in rural areas, where there is generally a scarcity of qualified workers. Finally, the sugar sector also endures the difficulty – common to the rest of the Food and Drink industry – to attract young recruits.

The study shows how many companies in the EU sugar sector have risen above many of those challenges. Indeed, there are many examples of age-specific or age-sensitive initiatives and policies in sugar companies to facilitate the adaptation and ensure the retention of senior workers and their knowledge. Succession planning and the timely transmission of knowledge are widely identified by sugar companies as key for the management of their workforce. At the same time, many efforts are made to attract young graduates and to train young local workers with no prior qualifications.

Across the report, there are numerous individual examples of sugar companies that provide useful ideas and good practice examples for companies in the sugar sector and beyond. These include the concept of 'sequential retirement' (allowing retired workers to come back to work for the time of the processing season) in Slovakia, the inter-generational and multi-disciplinary teams put in place in the Netherlands, the integration in a single process of succession planning, recruitment and transmission of knowledge in Spain and the development of a comprehensive program for workers aged 58+ covering aspects such as health, training, working time and retirement policies in Finland.

Source: CEFS-EFFAT Socio-demographic Study of the EU Sugar Industry (Available at the common website of the sugar sector social partners www.eurosugar.org)

GOOD PRACTICE	DESCRIPTION
Apprenticeships	Young people participate in solid training and get a qualified job opportunity for their start into the working life. Some of the apprentices who have finished their curriculum, both in education and training, can be transferred to permanent employment, in order to replace staff fluctuation and/or employees approaching retirement age. Companies' apprenticeship programs in the sugar industry generally serve one or more of the following purposes: • To facilitate youth employment by complementing the training of people with short experience or who just graduated. • To facilitate transmission of knowledge and succession planning through the creation of 'tandems' between new recruits and experienced workers approaching retirement age. • To create a pool of employable candidates and to promote the industry among young graduates. Companies also cooperate directly with technical schools in order to support training programs, offering students the possibility to visit factories and to do internships during their studies/holidays.

4. OCCUPATIONAL HEALTH & SAFETY

The industry continually works to improve safety methodologies, safety related communication and the physical workplace to prevent accidents and reduce hazards. Through training, management systems, open communications and target setting, the industry works to increase and maintain a constant awareness of health and safety. Training ensures that employees have the skills and knowledge to stay safe, reduce their personal exposure to hazards on the job and manage stress.

4.1 PROCEDURES & POLICIES

EXAMPLE: ACCIDENT AND STRESS REDUCTION PROGRAMME, NORDIC SUGAR, DENMARK

The origins of the initiative go back to the middle of the 1990s, when the company's management set a target of significantly reducing the number of industrial accidents at the Danish production sites.

At three Danish sites, the company launched the "Stumbling Stone Project", to reduce the number of accidents to an absolute minimum and to reduce stress in the workplace. Key to the result has been the active involvement of the employees in identifying the "stumbling stones" in their daily work. The sites concerned have seen a steady drop in the number of lost time incidents per year.

EXAMPLE: HEALTH AND SAFETY GUIDELINES FOR SUGAR FACTORIES (SILOS), FRANCE

This approach builds on the reflections carried out by the profession since the 60s. It is an opportunity to obtain feedback from experiences on the basis of the accidentology study in this field, both at international level and at the level of French factories (analysis, origin of the accident, aggravating factors and experience feedback with reflections on the preventive measures to be applied).

In January 2005, the professional guide to the state of the art concerning safety in sugar silos was published. The professional guide to management of the risk of the spread of Legionnaire's disease was published in January 2006 and updated in 2007.

GOOD PRACTICE	DESCRIPTION
Policies	Specific safety procedures and policies, tailor-made for the sugar industry and taking into account the specific hazards linked to the manufacturing process, are implemented in all sugar factories and pay special attention to prevention. This involves in particular: (a) Assessing the key health and safety risks/hazards; documenting that assessment and reviewing it periodically as appropriate. (b) Adopting measures to – in order of priority – eliminate, prevent or mitigate risks/hazards. (c) Providing workers with adequate protective equipment whose functionality is regularly checked and making sure that it is effectively used. In association with national farmers' association members of COPA and GEOPA European beet growers endorse the resolution protecting workers' health against plant protection products, adopted in 2010 between EFFAT and GEOPA, and the agreement on the reduction of workers' exposure to the risk of work-related musculo-skeletal disorders in agriculture and its best practices and proposals adopted in 2005 between EFFAT and GEOPA.

Investment in workplace health and safety measures	This good practice includes many different modalities of which the following are just some examples:
	• Safety in or around sugar silos: Publication and up to date professional guidance on silos security and safety are circulated widely in collaboration with competent authorities (France) to further the knowledge of risks in sugar silos (fire, explosion and illnesses) and improve the collective dialogue not only between employers and workers but also with the authorities.
	• Improvements and changes in installations to prevent and reduce the number of incidents (example: changes at or around sugar juice filters).
	• Communication on safety and prevention measures through direct, easily accessible and frequent communication means such as:
	  • The creation of a video filmed in the factory with real employees and taking into account their suggestions regarding critical points to be aware of. This video comes in addition to legal training obligations. It can also be shown to anyone visiting the factory.
	  • Creation of 15-minute talks, taking place regularly among teams on diverse topics such as driving machinery, noise, back protection, chemical risks, chemical vs. thermal burn risks and remedies, working at height, hands and eyes protection, work in confined spaces, etc.). This initiative also comes in addition to and not as a replacement of formal training on health and safety.
	• Up to date health and safety information has the obvious benefits of reducing fatalities, injuries and illnesses. This practice is more than just accident prevention – it encompasses all aspects of working conditions. Generally, health and safety measures represent cost savings in a variety of areas and help to improve productivity and performance.

4.2 CREATING A CULTURE OF HEALTH & SAFETY

EXAMPLE: INFORMATION AND EXCHANGE COMMITTEE ON HEALTH AND SAFETY, FRANCE

There was a need to share information with the social partners in order to improve health and safety in sugar factories. An agreement was signed with the trade union organisations, setting up an information and exchange committee on health and safety. The organisations are informed of the profession's annual health and safety statistics and all initiatives taken in the field of health and safety at work. The results are greater efforts in the field of safety and making the personnel aware of actions taken in order to prevent industrial accidents. In terms of resources, paid leave was provided to attend the annual meeting for 3 staff representatives per trade union organisation who are competent in the matter.

GOOD PRACTICE	DESCRIPTION
Promoting a culture of health & safety	An organisation's attitudes and values regarding safe working are important factors that influence its approach to work and ultimately its health and safety performance. Put another way: it is not enough to provide safe equipment, systems and procedures if the culture does not encourage healthy and safe working. Companies can promote a culture of health & safety (H&S) in different ways and often include one or several of the following measures: • Specific training for H&S managers. New engineers may be required to spend some of their initial working time in the H&S Department. • Company and managers' targets are established that are linked to results in H&S. • Meetings with trade unions concerning safety issues are carried out on a regular basis for information and consulting purposes. • A physical and/or electronic mailbox is available for everyone to provide risks notifications for the company management. • Implementing the sugar-specific 'Leonardo' health and safety programme developed by EFFAT and CEFS and keeping it fresh in workers' minds through regular 'refreshment' training sessions. • Extending first-aid training to all employees, including people normally not involved in daily factory operations such as managers and technicians. • General initiatives encouraging the exchange of new H&S improvements between factories and/or companies. For instance: (i) An annual 'health and safety day' at the workplace to evaluate the progress achieved, to present relevant topics (current legal topics or technical themes) and discuss emerging issues and possible solutions. Representatives of the factory workers are invited to participate. (ii) An internal 'healthy encounter' between factories and/or companies is established, based on exchange of good practices. (iii) other meetings (training or information) involving workers and their representatives with the participation of health and safety practitioners, security engineers and other experts to update knowledge and culture on these issues.
Awareness raising initiatives	Farming organisations in collaboration with other private associations in agriculture and/or with public authorities and a national mutual fund are involved in farm safety projects and programmes. In particular, they provide guidelines, communication tools, e-tools, organised training modules, and projects to tackle specific topics on health and safety to encourage entrepreneurs to ask the right questions and implement prevention programmes to promote better working conditions for their employees.

4.3 TRAINING

EXAMPLE: LEADERSHIP, COMMUNICATION & CONFLICT MANAGEMENT, NORDZUCKER, GERMANY

Nordzucker has a large number of engineers and foremen who have been in management positions for many years, and the company needs to find successors. The challenge is to update the current knowledge of the people in management positions and at the same time to allow young, higher education engineers and foremen to take over management positions in the future.

Launched in 2013, a training workshop with 100 engineers focused on practical education, with simulation from examples of the everyday life of the trainee playing a large role in identifying the participants' training needs in terms of leadership, communication and conflict management. The training workshop itself was preceded by intensive preparation (interviews between participants and their closest managers) and follow-up activities (feedback interviews and agreement on education goals), with adequate record keeping throughout the process. The initiative resulted in improved cooperation and handling of conflicts, increased employee satisfaction and motivation and allowed the company to show leadership on managing demographic changes.

EXAMPLE: CONTINUING PROFESSIONAL DEVELOPMENT, PLANT PROTECTION PRODUCTS (PPP), UK

The National Register of Sprayer Operators NRoSO is a central register of sprayer operators using Continuing Professional Development as a means of ensuring ongoing training. Everyone who uses plant protection products authorised for professional use must hold a recognised City & Guilds NPTC certificate of competence.

GOOD PRACTICE	DESCRIPTION
Sector specific training programmes with a focus on safety	Specific training programmes, tailor-made for the sugar industry, taking into account the specific hazards linked to the manufacturing process, are implemented in all sugar factories and pay special attention to prevention. This involves, for example: • Training on appropriate usage of protective equipment: what type of protective equipment to use in different situations; what equipment is the best for various risk types in the sugar industry; how to use the equipment to achieve the best protection; examples of incorrect usage. • Training of appropriate techniques for work with chemicals used in the sugar industry. • Training regarding 'loading safety' applicable to workers active in the warehouse and packaging areas. • Pre-campaign 'training days' for all employees, including seasonal workers. Training days introduce in detail the crucial aspects of health and safety during the campaign. They take place during working time and involve all employees, seasonal or permanent. Training content is prepared so that it takes into account different individual backgrounds and their prior level of knowledge about the industry. • Communication on safety and prevention measures through direct, easily accessible and frequent communication. • Extending first-aid training to all employees, including people normally not involved in daily factory operations such as managers and technicians.
Farmers organisations promote the responsible use of PPP	Most sugar beet growers' associations provide on their website dedicated information and on-line services so as to give growers all the necessary elements for a responsible use of plant protection products (PPP). In addition, some countries have implemented specific requirements for the use of plant protection products.

Training on stress management	EU sugar companies increasingly provide training that covers one or several of the following areas: • Conciliation of work and family life. • Techniques to deal with stress individually. • Keeping a healthy and balanced lifestyle, including adequate nutrition during campaign shifts. • Burnout prevention and mitigation. Work-related stress has been identified at international, European and national levels as a concern for both employers and workers. According to the agreement signed on this issue by social partners at European level in 2004, work-related stress can be caused by different factors such as work organisation and processes, working conditions and environment, communication and subjective factors related to the individual. In the EU, measures against excessive stress can include: • Management and communication measures such as clarifying the company's objectives and the role of individual workers, matching responsibility and control over work, improving work organisation and processes. • Training managers and workers to raise awareness and understanding of stress. • Provision of information to and consultation with workers and/or their representatives. If companies can help their employees to be more able to deal with stress: • It can reduce absenteeism and recruitment costs – helping to find and retain the best people for much longer. • It can boost morale and motivation – resulting in strong performance and productivity. • It can create a good work atmosphere – a great place to work helps people to manage stress even under adverse circumstances.

5. STAKEHOLDER RELATIONS

The European Sugar Industry expects socially responsible behaviour from its suppliers. Suppliers are generally chosen on a business basis, but for major suppliers this also includes a consideration of their corporate social responsibility according to the provisions of the European Sugar Industry CSR Code of Conduct.

The European Sugar Industry supports all European regulations aimed at counteracting fraud and corruption in the trade with different countries of the world1 and, in the general context of business ethics, undertakes to comply with the OECD guidelines for multinational companies and, beyond the CEFS area of activities (i.e. EU-based sugar production), to promote them as far as possible.

Sugar companies and beet growers take their share of responsibility for their role and economic impact in the EU rural areas where factories and beet growing areas are located. As an important economic actor in rural areas, sugar companies and beet growers aim to provide economic benefits to local communities and to promote their development.

5.1 BUSINESS ETHICS

EXAMPLE: AZUCARERA, SPAIN

Anti-fraud, anti-corruption and anti-bribery policies and a whistle-blowing channel are at the employees' disposal to inform on, share and report this type of information or conduct.

GOOD PRACTICE	DESCRIPTION
Counteracting fraud & corruption	Companies develop internal ethical guidelines/codes and/or similar instructions to employees regarding how to comply with existing best standards in terms of business ethics and in order to avoid the involvement of companies' employees in fraudulent business activities and/or corruption practices involving public officials. Companies implement this practice by: • Holding internal trainings on company anti-bribery and anti-corruption policies. • Establishing a Code of Conduct that is made available and known to all employees.

5.2 SUPPLIER CODES

EXAMPLE: NORDZUCKER GROUP INTERNAL CODE OF CONDUCT AND SUPPLIER CODE OF CONDUCT (GERMANY, DENMARK, SWEDEN, FINLAND, LITHUANIA, POLAND, SLOVAKIA).

The Supplier Code of Conduct is to ensure that suppliers operate in accordance with internationally recognised minimum standards for conducting business. Commitment to the terms of this Code of Conduct is a condition of any agreement or contract between Nordzucker and a supplier. The code covers business integrity (legal compliance, bribery and corruption,

1 See Regulation on the General Scheme of Preferences n° 2501/2001 of 1012.2001-OJEC L 346 of 31.12.2001, art. 26, and withdrawal or suspension provisions included in different regulations as regulation 2007/2000/EC on Balkans, as well as in bilateral agreements.

gifts and hospitality, conflict of interest, competition, communication and reporting, etc.), people (diversity, fair treatment and labour standards, human rights, privacy, harassment and discrimination, health and safety) and role in society (environment, quality, food and feed safety, community).

Nordzucker expects suppliers to develop, implement and document appropriate internal business practices to ensure awareness of and compliance with this Code. Suppliers are responsible for ensuring that their respective sub-suppliers (including sub-suppliers classified as home-based workers) comply.

The company reserves the right to verify the compliance of with the Supplier Code of Conduct through audits carried out by Nordzucker and/or a third party. Suppliers must agree to such audits, make employees and contract workers available for the audits and not discriminate or retaliate against workers for their comments to the auditors. If a supplier fails to comply with any aspect of this Code, the supplier is expected to implement corrective actions. In the event of material breaches of the terms of this Code, Nordzucker reserves the right to terminate any supplier agreement.

GOOD PRACTICE	DESCRIPTION
Codes of conduct in contracts	A Suppliers Code of Conduct is a specific set of principles and/or procedures that company suppliers are expected to respect. These codes of conduct will typically cover the need to respect human rights and basic labour standards. By introducing those codes of conduct in contracts with major suppliers/contractors, the company sends a clear message that their contractual relation is subject to the respect of those terms.
Selecting suppliers based on social/ethical performance	Company suppliers can be excluded from the circle of suppliers if they do not commit to respecting a number of basic standards, including child labour, core ILO Conventions, non-discriminatory practices, harassment, equal opportunities, etc. Companies can in particular: • Ask their suppliers to commit to respecting equivalent standards to the ones contained in the Code of Conduct applicable to the EU sugar industry. • Ask their suppliers to participate in and use ethics-based database/platforms (e.g. SEDEX). • Directly inspect key suppliers.

5.3 CUSTOMERS AND PRODUCT TRANSPARENCY

EXAMPLE: DEDICATED WEBSITES, VOLUNTARY CORPORATE REPORTING, EUROPE

The sector provides numerous sources of information regarding sugar production in Europe, including consumer-oriented information regarding the use of sugar as well as sugar and health questions. Examples of information sources include the following:

- CEDUS in France (www.lesucre.com)
- Suiker Stichting in The Netherlands (www.suikerinfo.nl)
- IEDAR in Spain (www.iedar.es)
- 'Making Sense of Sugar' (http://makingsenseofsugar.com/) in the UK,
- 'Mit Zucker-Wissensforum Zucker' (http://www.mitzucker.de/wissensforum) in Germany.
- Public websites of most sugar companies in the EU as well as numerous CSR and sustainability reports of both listed and non-listed sugar companies.
- Beet growers' associations also provide, on their websites, either information or web links to dedicated websites.

GOOD PRACTICE	DESCRIPTION
Openness and responsibility towards our products and the customers	Sugar companies are open towards stakeholders and other third parties regarding their environmental, social and economic impacts. They provide objective information regarding the way their products are produced as well as their impacts on people and the planet. • Companies are open regarding the way sugar and sugar products are produced. They provide information, for example though their public website, regarding the installations where sugar products are produced. They give the opportunity for local communities and third parties to visit the production sites. • Companies assess their environmental, social and economic impacts and communicate openly about those, for example, through publicly available reports (e.g. CSR and sustainability reports) drafted in an accessible way. • Companies provide credible and up to date information regarding the latest scientific knowledge regarding sugar and health, for example, through their general website or via dedicated communication vehicles, either on-line or off-line.

5.4 LOCAL ECONOMY AND COMMUNITIES

EXAMPLE: COMMUNITY RELATIONS, DENMARK, SLOVAKIA, SPAIN

Nordic Sugar factory in Nykøbing, Denmark provides the nearby town with the residual heat from the factory operations (that take place during the heating period) providing the equivalent energy needs of 1000 households. Heat that would have otherwise been wasted is used locally and the factory also benefits from the revenues of the system.

Slovenske Cukrovary factory in Sered, Slovakia: although the distance between beet fields and factories is generally short in the EU (average of 45km), road traffic related to lorries transporting sugar beet can cause some damage to some local roads after some time. It is relatively common that sugar companies agree to help in maintaining and repairing some of those roads on a periodical basis. In some cases, companies can even go further and actually improve the existing local roads (for example, by adding cycle paths) even if unrelated to local transit of beet lorries.

Azucarera, Spain: cooperation between the factory and the local firefighter corps. The factory provides the local firefighter squad with facilities to train for emergency situations. This is a win-win situation both for the local community and the factory by having a well trained and more efficient firefighting and emergency service.

EXAMPLE: COMPLAINTS COMMISSION, SUIKER UNIE, THE NETHERLANDS

The company has put in place a grievance mechanism to deal with local issues (nuisances, complaints, etc.) which allows the members of the local communities to express their discontent and to enter into a dialogue with the company in order to resolve the issue.

GOOD PRACTICE	DESCRIPTION
Grievance mechanism for the reporting and resolution of complaints regarding negative local impacts	A grievance procedure is put in place to provide those affected by the company's operations, with the opportunity to raise their concerns and to indentify and address problems. Dispute mechanisms are an increasingly effective tool for establishing communication channels between companies and communities. When successful, they offer a trusted way for local people or communities to voice and resolve concerns related to development projects, while providing companies with transparent, effective ways to address community concerns. In general, a well-functioning grievance mechanism: • Provides a predictable, transparent, and credible process for all parties, resulting in outcomes that are seen as fair, effective, and lasting • Builds trust as an integral component of broader community relations activities • Enables more systematic identification of emerging issues and trends, facilitating corrective action and pre-emptive engagement.
Community relations	Companies and farmers take all necessary measures to be active members of their local communities by engaging with local actors, understanding local needs and by identifying the areas of possible cooperation and mutual benefit. As sugar production involves intense industrial and logistical activities that take place in rural areas, in particular during the beet processing campaign, they tend to become a focal point of daily life in these areas. The relationship between the town(s) surrounding a factory and the factory is key for the good long-term relationship (often lasting more than 100 years) that many factories have established with those communities. The result has been many different agreements, collaborations and synergies built between factories and local communities. Those range from supplying district heating to the town's households during winter to providing facilities for local firefighter training or building cycle paths, to name just a few examples.

ANNEX C1
ADDITIONAL CASE STUDIES

1. LABOUR RELATIONS

NO DISCRIMINATION

COLLECTIVE AGREEMENTS, FRANCE
Collective agreements in 2004 and 2009 for the agricultural sector covering issues such as pay gaps between men and women, access to agricultural jobs, training, balance between professional and private life, etc.

EQUAL OPPORTUNITIES & HARASSMENT POLICIES, AZUCARERA, SPAIN
Azucarera is committed to providing equal opportunities in the training, development and professional careers of its workers, taking into account at all times their individual skills and abilities. The company has created the position of "Equal Opportunities Officer" and developed an Equality Plan to ensure that this goal is achieved. The company has also put in place strict policies and control measures regarding the non-tolerance of any type of sexual, mental or physical harassment. It has drawn up harassment at work protocol, available to its employees, to prevent and avoid this type of conduct.

NON-DISCRIMINATION, SÜDZUCKER GERMANY
The Chair of the general works council is the addressee of any complaint by reason of discrimination.

2. EMPLOYMENT

CONTRACTUAL BASIS

GANG MASTER LICENSING AUTHORITY (GLA), UK (HTTP://GLA.DEFRA.GOV.UK/)
The GLA regulates businesses that provide workers to regulated sectors (including agriculture and horticulture) to make sure they meet the employment standards required by law. An individual or business that provides workers for agricultural work is called a 'gangmaster'. Such labour providers are assessed to check they meet the GLA licensing standards that cover health and safety, accommodation, pay, transport and training. They are checked to ensure they hold a licence and that tax, National Insurance and VAT regulations are met. A labour provider must have a GLA licence to work in the regulated sectors; it is a criminal offence to supply workers without a licence or use an unlicensed labour provider.

RESTRUCTURING

TRAINING / RETRAINING, AGRANA ZUCKER, AUSTRIA
The purpose of the foundation created by Agrana (Arbeitsstiftung Agrana) was to support, in different ways, former employees of the Agrana factory in Hohenau who had lost their jobs through the provision of: skills, training, help in seeking out new employment prospects or a new job, assistance in setting up a business.

Due to the need to cut costs within the context of the reform of the sugar regime, the Hohenau site was closed after the 2005 campaign. Apart from seasonal workers, 136 permanent employees were affected. Under the social plan that was

negotiated, management and personnel tried to find optimum solutions for the employees concerned. Some were able to continue working within the company, whilst others benefited from early retirement. The aim was to offer the remaining personnel the best training or retraining possibilities so as to optimise their chances of returning to the labour market.

In Austria, there is a legal provision for using unemployment benefits to follow training courses for up to 209 weeks (Law on unemployment insurance – Art. 18-5). This can be done when the company that used to employ the persons in question creates an institution responsible for planning and implementing measures with an economic impact. This institution must be recognised by the employers and trade union organisations empowered to negotiate collective agreements (Law on unemployment insurance – Art. 18-6). Thus it was that the Agrana Hohenau training / retraining foundation was collectively created by Agrana in conjunction with the department responsible for the labour market in Lower Austria (Arbeitsmarktservice Niederösterreich) and an institution with experience in the creation of training foundations for the agri-foodstuffs industry (Aufleb GmbH).

In this way, each employee was offered the choice between a new career direction, training or retraining courses or new types of training. A special unemployment benefit was paid during this period. The social plan was finalised at the beginning of 2006. The foundation was created in March 2006. Employees were able to register up to December 2006. 60 employees were interested and 49 of them were admitted with a view to vocational guidance and qualifications. For them, the result was better possibilities of successfully returning to the labour market, particularly for employees who had worked in the sugar industry for a long time, which was usually the case, and for whom a change was more difficult to manage. The training costs amounted to about 6,000 Euros and were financed by the company and the social partners (through the Agrana foundation). Possible extended unemployment benefits were payable by the authorities.

RESPONSIBLE RESTRUCTURING OF A PRODUCTION SITE, NORDZUCKER

- After checking the structure of the production site, it was decided to close the Schleswig factory at the end of 2003.
- All employees at the factory were offered new jobs.
- Employees aged 55 or more had the opportunity to take early retirement. This proposal was aimed at creating new jobs and remained open until 2005.
- Compensation was paid in cases of voluntary termination of the contract of employment.
- Employees to whom the previous possibilities could not apply were given the opportunity of going through a training course (up to 12 months) at a specialised agency so as to improve their opportunities of rejoining the labour market.
- Compensation was granted in the form of time off until 2006 in cases of overtime having been worked. Employees felt more secure regarding their future on the labour market. The age pyramid remained stable at the different remaining factories, with an average of around 45.

3. EDUCATION, VOCATIONAL & LIFELONG TRAINING

JOB-RELATED TRAINING

PROFESSIONAL QUALIFICATIONS, FRANCE

Reactivation of a mutual benefit fund for adaptation and retraining to support employment by organising training actions linked to the development of the professional qualifications of employees.

In 2003, within the context of lifelong vocational training, it was decided to reactivate a special scheme introduced in 1994 with a view to improving employee skills and qualifications and maintaining employment. The scheme is aimed essentially at persons whose knowledge is no longer in keeping with technological and/or organisational developments. With a view to attaining this objective as effectively as possible, a joint association was set up in 2003 to manage the fund.

The fund is aimed at safeguarding employment through transfers, hiving-off or business creation. It is also involved in the organisation and taking charge of numerous forms of training and particularly, in 2003, the training of 19 employees at all packing sites in the sugar industry for a CQP (Professional Qualification Certificate) as a machine operator. The fund was used for the last time in October 2012 and is still open today.

TECHNICAL BEET INSTITUTES, BRITISH BEET RESEARCH ORGANISATION, UK

The British Beet Research Organisation (BBRO) is a non-profit making company set up jointly by British Sugar plc and the National Farmers' Union. The objective of the BBRO is to commission and implement research and technology transfer designed to increase the competitiveness and profitability of the UK beet sugar industry in a sustainable and environmentally acceptable manner. The BBRO produces weekly email bulletins sent out to all registered sugar beet growers, providing them timely advice related to the production of sugar beet. The BBRO has also produced a general reference book designed to act as a reference point for growers giving key information on each aspect of producing the crop, optimal practice and what benefits are recorded from adoption of practices based on BBRO research findings. This reference book is updated annually to provide access to the latest advice and information.

The BBRO also provides a plant clinic review, allowing agronomists and farmers to get direct advice on any problems such as pests/disease they experience in field. This operates throughout the growing season. An annual conference, open for all growers to attend, is held to provide talks and information on different topics. An open day is held each year for each factory area, open for all growers to attend, again to provide access to trials, demonstrations and direct talks to growers by the researchers. The BBRO website also outlines key research areas and topics.

The BBRO structure includes an R&D board: this consists of scientists and growers' and processor representatives in order to help provide guidance on the research carried out and on areas of concern in the grower base. The BBRO is also working with leading growers to provide two-way information exchange to identify possible target areas for future research and ways to communicate more effectively with growers. The BBRO briefs farm advisers, such as agronomists and British Sugar Area managers, at dedicated events and in smaller meetings, to ensure advice on farms is linked to the latest research findings.

BEET RESEARCH INSTITUTES IN THE EU AND SWITZERLAND:

COUNTRY	INSTITUTE	ABBREVIATION	WEBSITE
BE	Institut Royal Belge pour l'Amélioration de la Betterave Koninklijk Belgisch Instituut tot Verbetering van de Biet	IRBAB KBIVB	www.irbab-kbivb.be/
CZ	Řepařsky Institut Semčice	RIS	www.semcice.cz
DK & SE	Nordic Beet Research	NBR	www.nordicbeet.nu
DE	Institut für Zuckerrübenforschung	IfZ	www.ifz-goettingen.de
ES	Asociación de Investigacíon para la Mejora del Cultivo de la Remolacha Azucarera	AIMCRA	www.aimcra.com
FR	Institut Technique de la Betterave	ITB	www.itbfr.org
IT	BETA Italia – Ricerca in Agricoltura	BETA Italia	www.betaitalia.it
HU	Beta Kutató Intézet	BKI	www.beta-kutato.hu
NL	Instituut voor Rationele Suikerproductie	IRS	www.irs.nl
AT	Zuckerforschung Tulln	ZFT	www.agrana-research.com
FI	Sokerijuurikkan Tutkimuskeskus	SJT	www.sjt.fi
UK	British Beet Research Organisation	BBRO	www.bbro.co.uk
CH	Schweizerische Fachstelle für Zuckerrübenbau / Centre Betteravier Suisse	SFZ / CBS	www.zuckerruebe.ch

4. OCCUPATIONAL HEALTH & SAFETY

EXTENDED FIRST AID TRAINING, MORAVSKOSLEZSKE CUKROVARY, CZECH REPUBLIC

Around 2013-14 there were situations where the effective intervention of some colleagues prevented huge injuries to other workers. Historically, first aid training was open only to a limited number of expert persons. Since there is already a regular training of health safety and fire protection, the company widened this – mostly theoretical – training with practical exercises of first aid under the coordination of an external expert (first-aid doctors). This event was open to administration and production managers and experts. The objective was to cover not only the production areas but to allow all possible participants to refresh their knowledge.

PFEIFER & LANGEN, GERMANY

The company provides physiotherapists who explain to workers the correct movements and positions to be used to prevent backaches and headaches: (www.eurosugar.org/corporate-social-responsibility/exemples-of-good-practice/health-and-safety/pfeifer-langen-germany/)

Introduction of an Intranet system on safety at work for all employees in order to reduce accidents: (www.eurosugar.org/corporate-social-responsibility/exemples-of-good-practice/health-and-safety/pfeifer-langen-germany-2/)

NORDZUCKER, GERMANY

Creation of a working group to promote the safety at work and health protection, to elaborate management rules. Establishment of a system of rewards an incentives to promote health and safety: (www.eurosugar.org/corporate-social-responsibility/exemples-of-good-practice/health-and-safety/nordzucker-germany-since-1997/)

ANNUAL HEALTH & SAFETY EVENT, FRANCE

Every year, French sugar companies have a meeting on health and safety at the workplace. A prize is awarded to the sugar factory with the best results in terms of safety (overall frequency). Since 2003, a second prize called the "Leonardo de Cristal" has been awarded for an improvement that can be reproduced at other sites or by other organisations. A panel selects case examples according to the following criteria: originality of the project, reproducibility, interest for the profession, preliminary study and methodological input, inclusion of the personnel in the process of reflection, continuity or ease of maintaining the achievement in future.

In two years, eight initiatives were selected and two trophies awarded, on subjects as varied as risk analysis, highly concrete achievements in the choice of personal protective equipment, skills management or management of co-activities at a site. For the third year, seven initiatives have already been selected.

WORKPLACE HEALTH PROMOTION PROJECT THROUGH TRAINING, AGRANA AUSTRIA

The restructuring of sugar factories due to the EU sugar reform that started in 2006 and lasted until 2009 has led to a progressive concentration of production from closed factories into the remaining ones. In practice, this means longer processing campaigns for the factories, which can be a source of stress-related issues.

In August 2012, AGRANA Sugar (plants in Tulln & Leopoldsdorf) and the Zuckerforschung Tulln started with the implementation of the Project "Workplace Health Promotion". The purpose of the Project is to secure the employees' needs regarding health care, social welfare and better working conditions, during the shifts and in general. Project duration is two years. Starting with an employee survey, the employees have the possibility to work within quality circles on their topics and find critical solutions. After presenting these solutions to a steering committee, the implementation starts. At the end of two years, there will be a new employee survey to measure the progress. First stage of the project:

- Learning how to deal with stress.
- Personal health and safety training for seasonal campaign workers.
- Training to maintain the work-life balance; feeling responsible and keeping a balanced nutrition when working in shifts.
- Workshops about 'acting more than reacting'.

Second stage:

- Groups are working on special solutions for shift workers.
- Employee survey to measure the success of the project.

The training activities and group work started in 2013. First solutions, which had been worked out by the employees, are already implemented. The main success of the project so far is that the employees have improved and developed their own resources in a more active way and ensure that when a problem occurs they will find a common solution together.

BURN-OUT TRAINING AND CONCILIATION OF FAMILY LIFE, SÜDZUCKER, GERMANY

How to realise, use and develop own resources through active self-management. In addition to existing company measures and procedures to assess and minimise stress in relation to work organisation, the company also wanted to provide training regarding work-life balance, identifying signs of burn-out and helping employees to cope with stress in general.

A successful career, a fulfilled life, health and the feeling of living a meaningful life – a nice imagination, a longing desire, an unrealistic utopia? Instead of that: "I am stressed!" is the omnipresent cry in our time. But how do we get the many necessities of life and working obligations in a good balance? How can we make sense when dealing with stress? How can we make good use of our own energy, to exploit our own resources and reduce energy blockages and finally achieve our goals, instead of living with them in a state of war? The goals of the initiative:

- To help participants get an insight into their own behaviour,
- Learn to deal with their stress,
- Learn to maintain their work-life balance in a better and productive way, through the use of their own resources,
- Learn to act more and react less,
- To help employees in achieving their goals with more serenity and joy.

INITIATIVES TO INCREASE AWARENESS ABOUT HEALTH AND SAFETY IN AGRICULTURE

"DENK AN MICH! DEIN RÜCKEN!" ("THINK OF ME, YOUR BACK!"), GERMANY

This is a national prevention advocacy campaign for workers and farmers which objective is to reduce the musculoskeletal disorders which have represented for many years a great part of the statistics in terms of disability in Germany and are therefore recognised as a major public health problem in particular in the agriculture and gardening sector. The causes of back problems are manifold. Not only heavy lifting and carrying operations, constant sitting or awkward postures cause back problems. Constant stress and pressure to perform also represent a burden on backs in the long run. As part of the campaign, social insurance companies in the agriculture sector support target group-specific media such as brochures, posters and videos, and offer training and events. http://www.svlfg.de/kampagnen/. The prevention campaign "Think of me, Your back!" runs from 2013 to 2015.

SECTOR SPECIFIC PPP TRAINING PROGRAMMES WITH A FOCUS ON SAFETY

PROMOTING RESPONSIBLE PESTICIDE USE, VOLUNTARY INITIATIVE, UK

The programme was developed as an alternative to a pesticide tax, which had been under consideration by the Government. By 2006 the programme had met or exceeded the vast majority of its targets. In the light of this, Ministers agreed to continue the programme on a rolling two-year basis. It is overseen by an independent Steering Group which directs the implementation process and reports progress to UK Government (DEFRA) Ministers.

RED TRACTOR ASSURANCE FOR CROPS AND SUGAR BEET, UK

The scheme is independently assessed annually on all farms (EN45011). The red tractor requires farmers to comply with all relevant legislation but also additional standards through different areas including environmental protection, plant protection products, soil management etc. http://assurance.redtractor.org.uk/resources/000/576/582/RT_Combinable_Crops__Sugar_Beet_Standards_V2.02.pdf

NATIONAL SPRAYER TESTING, UK

To improve the standard of equipment and improve compliance. The sprayer operator must hold a recognised NRoSO certificate and working application equipment must have an NSTS (National Sprayer Testing Scheme) Certificate http://www.nsts.org.uk/.

BASIS, UK

All plant protection orders need to be made by a qualified person. BASIS is the independent organisation set up at the suggestion of the UK Government in 1978 to establish and assess standards in the pesticide industry relating to storage, transport and competence of staff. BASIS offers a range of examinations and recognised qualifications for people working in the pesticides, fertiliser and related sectors. BASIS also operates an annual inspection scheme to audit pesticide stores and ensure their operation presents minimal risk to people and the environment. http://www.basis-reg.com/default.aspx.

INTEGRATED PEST MANAGEMENT (IPM PLAN, UK)

This fulfils EU regulations under the Sustainable Pesticide Use Directive (SUD). Previously farmers were required to have a crop protection management plan (CPMP). The NFU updated this work to ensure compliance with the SUD. The plan should be completed by any farm or nursery enterprise which is using professional pesticides to produce crops, ornamentals, fodder or feed. It is recommended that it should be completed by the owner/farm/nursery manager in collaboration with the sprayer operator and agronomist.

CERTIFICATION, THE NETHERLANDS

In the Netherlands, farmers need a specific certificate to be allowed to spray plant protection products: this certificate is granted after the participation in 4 education meetings (over a maximum of four years).

PROOF OF COMPETENCE/LICENCE, GERMANY

In Germany, starting in 2015, farmers are obliged to update their expertise in the use of plant protection products every two years (Pflanzenschutz- Sachkundenachweis). With the enactment of the Plant Protection Act on 14.02.2012 and the new crop protection expertise Regulation on 06.07.2013, a new procedure to prove competence in crop protection applies.

Anyone who has professionally applied plant protection products, sold such products, supervised as part of training or provides advice on plant protection needs a nationally uniform proof of expertise (SKN in card format) before the start of each activity. The application to obtain the new SKN must be made to the competent authority of the state in which the expert is resident. Regular training in plant protection products is mandatory. This training must be recognised by the competent authority. If users do not provide evidence of competence their certificate may be revoked. Then, in order to gain the expertise again, a re-examination must be passed. Even a person from another EU Member States or from third countries must apply for such a certificate or proof of competency to be in a capacity to use, sell or advise on such products and to obtain this certificate and recognition in Germany.

5. STAKEHOLDER RELATIONS

LOCAL ECONOMY

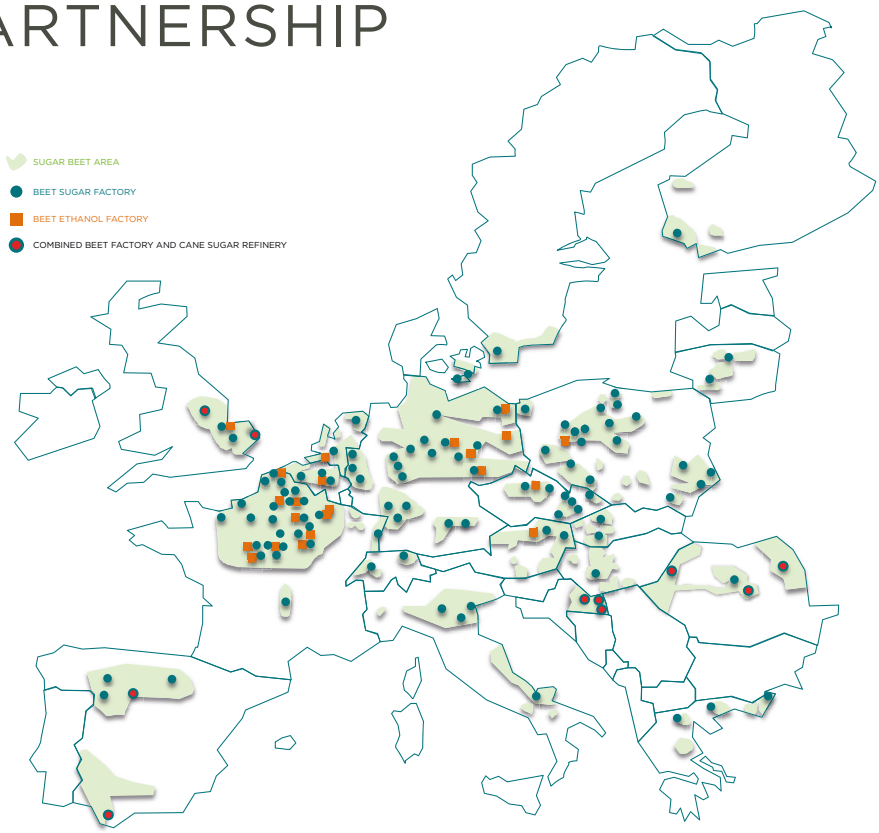
FACTORY CLOSURE (1998-2004), VERMANDOISE GROUP, FRANCE

The closure of the Beauchamps sugar factory, part of Vermandoise Group, led to the loss of 99 jobs. The company Vermandoise Industries had promised to reindustrialise the local "labour market area" around Beauchamps. This action would be aimed mainly at creating some 50 new jobs. At the end of the process, i.e. beginning of 2004, the results achieved were as follows:

- Revitalisation of the local labour market: in addition to its reindustrialisation obligation, Vermandoise Industries had also revitalised its former site. In the place where the old sugar factory had stood, seven companies were set up on the site, creating some 40 jobs. At the same time, new prospects were expected with the creation of a business park developed by the local municipality in which five companies had been set up by January 5th 2004, providing some 30 jobs. (i.e. over 70 jobs created in all).

- Jobs: in this reindustrialisation process, with help from specialists, Vermandoise Industrie also financed (in the form of subsidies) the creation of various jobs in new small companies (60 jobs). All in all, Vermandoise Industrie created 130 jobs. Upstream of this activity, Vermandoise Industrie found places for the personnel concerned by the closure. There were 99 employees at the sugar factory. Each of them was offered a job within the Group: 50 accepted this offer; 19 found employment in another company, with the help of a placement agency, 11 took early retirement and 19 found new jobs on their own initiative.

EU BEET SUGAR **SUSTAINABILITY** PARTNERSHIP



UNITING BEET GROWERS CIBE since 1927

CIBE, founded in 1927, represents 300,000 sugar beet growers from 16 EU countries (Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, the Netherlands, Poland, Romania, Slovakia, Sweden, the United Kingdom) plus Switzerland and Turkey.

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CEFS

Founded in 1953, **CEFS** represents all European beet sugar manufacturers and cane sugar refiners, covering sugar production in 21 EU countries plus Switzerland.

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EFFAT

EFFAT results from the merger of two European federations IECF-IUF and EFAI in 2000. It represents 120 national trade unions from 35 countries, defending the interests of more than 2.6 million members in the food, agriculture and tourism sectors.

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