



**IMPACT
REPORT >**

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**Impact of Solaris Bus & Coach S.A.
on the economy, society and the environment**



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Introduction to the impact analysis

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About Solaris Bus & Coach S.A.

Solaris Bus & Coach S.A. is a Polish producer of city, intercity and special buses, as well as trolleybuses and trams boasting over 20 years of experience. When it started operation, Solaris employed 36 people. However, the company's staff has now expanded to over

3,000. The manufacture of public service vehicles began in 1996 and since then almost 15,000 vehicles have left the factory gates and rolled out onto the streets of 32 countries worldwide.



Bolechowo

Head office, bus, coach and trolleybus assembly

Established in **1996**

Average No. of employees in 2015: **1,400**

Poznań

Final assembly of trams

Established in **2011**

Average No. of employees in 2015: **229**



Murowana Goślina

Maintenance

Established in **1996**

Average No. of employees in 2015: **157***

Środa Wielkopolska

2 production plants:

Production of bus and trolleybus bodyframes
Established in **1998**

Production of steel bodyframes for trams
Established in **2010**

Average No. of employees in 2015: **514 people**

* Employment data for the facility in Murowana Goślina includes people employed in connection with contractual service obligations in Olsztyn, Gdynia, Sosnowiec and Warsaw.

Reasons behind Solaris's decision to perform this impact analysis



Company's advantages resulting from this study:

Building awareness of the integral role of the company in Poland (by using specific, measurable values) which helps develop relationships with:

- local communities,
- local and state authorities,
- other companies and organizations.

Presenting the role the company plays in the social and economic life of the region by showcasing the significance of educational measures, as well as the impact on the market environment the company has as a result of various acquisitions and investments in the development of electromobility.

Better understanding of crucial impacts, both positive and negative, as well as a broader view of the context for making well-informed business decisions and taking optimization measures within current activities.

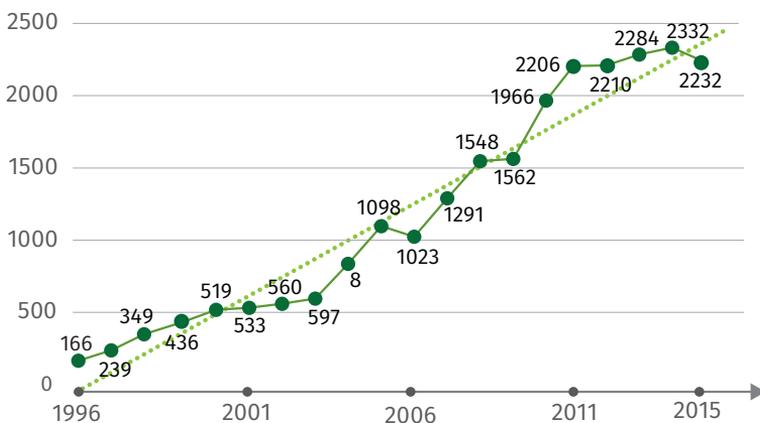
Presenting specific, real values for the effects of investments and other measures in the areas of educational and social commitment.

Creating a set of arguments (specific, balanced and credible) in various topical sectors to communicate with a variety of stakeholder groups, such as customers, local and central authorities.

Selected figures from the past 20 years

Dynamics of employment in Solaris Bus & Coach S.A.

The average annual increase in employment over the course of 20 years amounted to 31%*.



* Data from the end of each respective year.

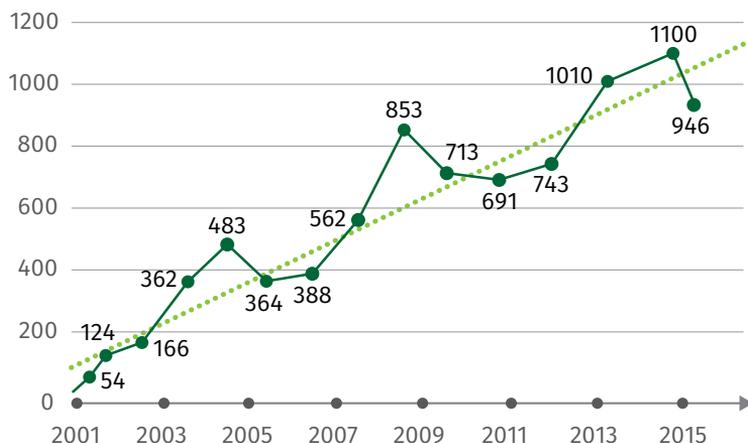
8%

increase in the number of people employed over the years 2005-2015

that rate is on average 43% higher than the growth reported by the automotive industry in the years 2005-2015 in Poland

Dynamics of exports by Solaris Bus & Coach S.A.

The average annual increase in foreign sales over the course of 15 years amounted to 29%*.



* Data from 1996-1999 is not included because of a lack of exports in those years. The substantial growth reported for 2000-2001 has not been included in calculations as it was deemed to be extreme.



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Value of purchases (intermediate consumption)

Raw materials and services from Polish suppliers prevail in the structure of Solaris purchases, accounting for 52.2% of the overall value of purchases.

That is **15 percentage points more** than the norm for the sector of automotive vehicle, trailer and semitrailer production, **in the case of which domestic purchases constituted 37.5% of the total intermediate consumption in 2014.**

Solaris purchases from Polish suppliers applied mainly to the following sections and divisions of the economy: vehicle, trailer and semitrailer production, professional and business services, warehousing and transportation services, utilities and recycling services.

52.2%



Polish suppliers

47.8%



foreign suppliers



1.34
billion PLN*

that is the total value of raw materials and services used by Solaris in 2015



110
swimming pools

which is the equivalent of the construction costs of over 110 public swimming pools

* 1 PLN = 0.23 EUR.

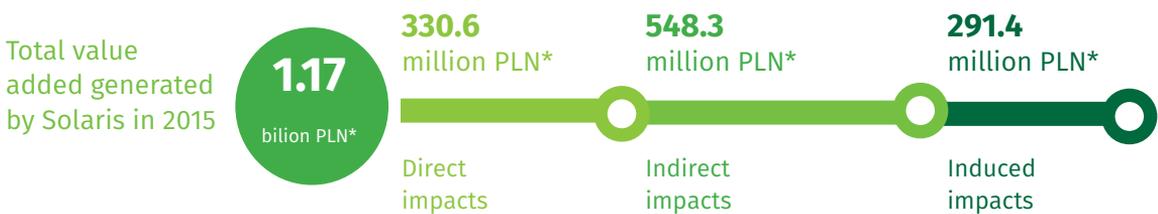
Gross value added**

Value added is an important economic indicator. It measures the input of a company into the production process of goods and services.

Gross value added can be calculated as the difference between output and intermediate

consumption. The bigger the share of value added in the final product of a company, the bigger its creative input in the production process, and the bigger its contribution to the Gross Domestic Product.

Gross value added generated in Poland in 2015 by Solaris, broken down by impact categories:



It's 2.5 times the annual state spending on teaching hospitals in Poland



The sum of all value added from all business sectors plus taxes on products less subsidies on products equals gross domestic product (GDP).

Each Polish zloty of gross added value produced by Solaris generates a total of 3.53 PLN in value added among suppliers and other entities in the Polish economy.

* 1 PLN = 0.23 EUR.

** Gross value added at basic prices.

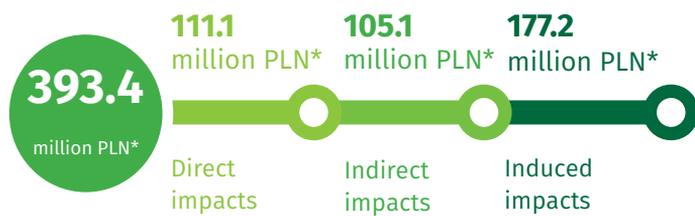
Income

By providing direct employment to its employees and creating indirect effects in the economy through its suppliers and sub-suppliers, who also provide jobs to their employees and pay them salaries, Solaris has an impact on generating incomes in all sectors of the Polish economy.

Solaris is among the top 5 percent of organizations, offering the highest industrial sector salaries and wages in the Greater Poland voivodeship.**

Income generated by Solaris in Poland in 2015

The total value of income generated by Solaris in 2015 **



2,300
full-time jobs

Direct employment in Solaris in 2015



As a result of Solaris operating in the Greater Poland voivodeship, unemployment in the region is curbed by 2.41 percent

+

5,393
full-time jobs

Number of jobs maintained in Poland's economy in 2015 by means of indirect and induced impact



That is 99% of all graduates of the Poznań University of Technology who obtained a degree in 2014

=

7,693
full-time jobs

Overall number of jobs maintained in Poland in 2015 thanks to Solaris business activity



Such a number of jobs would allow to completely eliminate unemployment in the city of Rzeszów

** Average gross monthly salary of 5,001 PLN or more.

*** This refers to net wages.

Contributions to state and local budgets

The positive impacts of Solaris operations on the Polish economy is also reflected in the amount of taxes, fees and other contributions paid to the state and local budgets.

These payments have a direct impact on financing public spending on i.a. regional development, road construction, environmental, social, educational and health

related investments. Taxes and payments from Solaris flow into the state budgets as well as into the budgets of local governments in which Solaris has its operations, and thus support the fulfilment of obligations of state and local authorities.

Contributions to state and local budgets paid by Solaris in 2015

163.6

million PLN*

Total amount of taxes fees and other contributions paid by Solaris in 2015.



71,720,000 PLN*

Value Added Tax (VAT)

67,029,000 PLN*

Social contributions**

15,344,000 PLN*

Advance Personal Income Tax (PIT)

6,355,000 PLN*

Corporate Income Tax (CIT)

3,188,000 PLN*

Vehicle tax
Perpetual usufruct fee***
Payments to the State Fund for Rehabilitation of Disabled Persons (PFRON)
Real estate tax

* 1 PLN = 0.23 EUR.

** Based on payroll calculations.

Research and development

Spending on research and development in Poland is relatively low in comparison to other European countries. Nonetheless, investments in this area are rising. According to the Central Statistical Office (GUS), gross domestic expenditure on research and development (GERD) in the private sector amounted to 7.5 billion PLN* in 2014, having climbed by nearly 20 percent year-on-year.

A real growth of innovation in Poland can only be achieved by an increased commitment of the private sector to that domain, which is something Solaris contributes to.

Measures taken by Solaris

144

million PLN*

Total spending of Solaris on Research and Development in the years 2012-2015



57 million PLN*

Internal expenditure** of Solaris on research and development in the years 2012-2015



86 million PLN*

External expenditure*** of Solaris on research and development in the years 2012-2015



684 people

Total number of full-time jobs related to R&D projects in Solaris in the years 2012-2015



40% of enterprises

Including Solaris, spend over 3% of their annual sales on R&D



3.1%

Expenditure of Solaris on research and development in 2014 presented as the percentage of total company sales

* 1 PLN = 0.23 EUR.

**Internal expenditure is the financial means spent in the reporting year on R&D, carried out by the reporting entity, irrespective of the origin of the funds in question. This covers both current expenditure, as well as gross fixed capital formation related to R&D activities (excluding amortisation of the fixed assets).

***External expenditure is R&D spending claimed by other contractors (subcontractors), both domestic and foreign ones.



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Social aspects

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Caring for the social environment it operates in, Solaris ventures a number of measures and initiatives addressed to local communities and its staff. These activities include offering trainings for workers, establishing a nursery called “Under the Green Dachshund”, doing trainings for drivers on road safety

and economic driving, vocational training programmes in collaboration with the vocational school in Murowana Goślina and Środa Wielkopolska, and social responsibility endeavours, implemented via the “Green Dachshund Foundation — for the rescue of the defenceless”.

Trainings for employees

819,000 PLN*

Total spending on training Solaris employees in 2016**

This sum constitutes the equivalent of costs for one-year post-graduate study courses for **164** people at the Poznań University of Technology

Practical Internship Programme in the vocational training class supported by Solaris

145,000 PLN*

total expenditure of Solaris on preparing students for vocational training exams in the years 2015-2016

This sum constitutes the equivalent of 19% of the spending of the Greater Poland voivodeship budget on tertiary education in 2016.

Ecodriving training for drivers

156

Number of drivers who completed ecodriving training in 2016

If all participants of energy-efficient driving trainings observed all the guidelines taught at these events, they would reduce fuel consumption by **157 million** litres per year, which equals to savings of **565,000 PLN** and a reduction of gas emissions by **407 tonnes of CO₂**.

Vocational training supported by Solaris

76

Number of graduates of the programme since its establishment

65

Number of graduates who were granted employment at the company since the establishment of the programme



* 1 PLN = 0.23 EUR.

** as of the end of November 2016.

“Green Dachshund Foundation – for the rescue of the defenceless”



14,000 hours

Dedicated by volunteers for the corporate volunteering scheme since the establishment of the foundation



over **959,000** PLN*

That is the total value of social involvement** of Solaris made since 2012 as part of projects run by the Green Dachshund Foundation – for the rescue of the defenceless

“Under the Green Dachshund” nursery

Adopting average market rates, we can assume that the opportunity to use a nursery free of charge for two years generated nearly **838,000 PLN in savings for Solaris employees in the years 2012-2014*****

Savings generated per employee who used the free-of-charge child care in the first two years amounted to **over 15,000 PLN******

This amount would be enough to cover the costs of **355 swimming lessons for infants** in Poznań (swimming pool nursery classes).



That is 1,750 working days, or 87.5 months of work, which equals to **7.3 years of work for one employee**



This sum would be enough to finance catering for all students of a medium-sized primary school for over **two years**, i.e. to buy **153,400 school lunches** in total.

* 1 PLN = 0.23 EUR.

** The value of the total social involvement includes financial and material contributions made to the beneficiaries and the estimated cost of time dedicated by employees to corporate volunteering programmes.

*** The number of children attending nurseries in the first two years multiplied by the estimated average fee for whole-day child care provided by the nursery.

**** Assuming that each parent had the possibility of placing their child in a different nursery or, in case of lack of vacancies in a nursery, of paying for a nanny.

80



Employees have sent their children to the company-run nursery

91



Children have attended the nursery since its establishment

28



Children were cared for in the nursery in 2016

1,827,412 PLN*

external subsidies

2,600,000 PLN*

funding provided by Solaris

* 1 PLN = 0.23 EUR.





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Environmental aspects – e-mobility

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E-mobility

E-mobility is a general term defining the development of electric drivelines for vehicles replacing those running on fossil fuels. The advancement of e-mobility is core to the transformation of the existing value chain in the automotive industry.

The first electric bus by Solaris premiered in 2011. Six years later, in 2017, the Solaris Urbino 12 electric became the first battery vehicle to win the title of Bus of the Year 2017.

Benefits resulting from the rollout of electromobility:



lower operating costs
electric power is cheaper than diesel



high efficiency
of the electric drive



zero emissions
at the place of use of the vehicle



lower noise level

Vibrations and noise

Out of concern for the health and safety of drivers and passengers alike, Solaris strives to minimise emissions of both noise and vibrations inside and outside its buses. This is particularly successful with electric buses and their characteristic lower noise emissions and vibration levels compared to buses with conventional combustion engines.

76%

reduction of vibration in the driver's seat on an electric bus, compared to a bus with a petrol or diesel engine

28%

lower noise level in the back of an electric bus compared to a bus with a combustion engine

16%

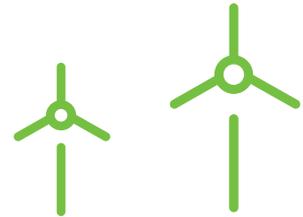
lower noise level generated by an electric bus when moving away from a stop compared to a bus with a combustion engine

E-mobility

Fuel costs

The oil reserves owned by Poland, for the operation of conventional vehicles, are extremely low compared to the real needs. At the moment 97% of the oil used in Poland is imported.

1.02
billion PLN*



Annual cost of the purchase of fuel for all city buses driving in Poland**

* 1 PLN = 0.23 EUR.

** Simulation for 11,376 city buses in Poland, assuming an average annual mileage of 60,000 km and diesel consumption of Diesel 44.85 litres/100 km.

This sum constitutes a considerable **15% of the total import of diesel**, heating oil, petrol or kerosene supplied to Poland in 2015

The same sum would be enough to build **wind power plants generating a total of 144 MW** of power, which could cover the annual demand for electric power of 3,973 electric buses

The impact of replacing diesel or petrol buses with electric ones, made by Solaris, on Polish streets



Combustion engine buses (11,376)

1.02
billion PLN*

Total average reduction of **fuel** costs, in annual terms**

* 1 PLN = 0.23 EUR.

** Simulation for 11,376 city buses in Poland. For this purpose, the authors assumed an overall number of city buses (as of 31 December 2015) less those running on alternative fuel. Data is based on the report: Transport. Activity results in 2015, prepared by the Central Statistical Office (GUS).



Electric buses (11,376)

10.2
billion PLN*

Total average reduction of **fuel** costs, over a period of 10 years**

Noise

Though inevitable, the development of transport entails a number of negative effects, such as the ever growing number of people exposed to detrimental and onerous factors, including vibrations and noise.

The various negative consequences of high noise and vibration levels on people's health, the environment and the economy, include:

- cardiovascular diseases,
- learning difficulties of affected children,
- sleep disorders,
- deterioration of environmental conditions,
- high costs of treatment,
- payment of invalidity pensions,
- faster use of production and transport means,
- decline of quality and utility of areas threatened by excessive noise.

Air pollution

Air pollution is one of the most severe environmental threats we face today. A result of the intensive development of transport, when industrial and municipal emission ratios are still insufficiently reduced, is the permanent exceedance of restrictions in air quality standards for many cities in the European Union.

In spite of anti-pollution programmes being implemented in areas particularly affected by limit violations, measures undertaken by local administrations yield no spectacular result, in particular in relation to industrial and municipal emissions. Hence also the special significance of green, zero-emission solutions for mass public transport, such as fully electric buses.

39.4
million PLN*
Total average reduction
of socio-economic
costs of **noise**, in
annual terms**

256
million PLN*
Total average reduction
of socio-economic costs
of **air pollution**, in annual
terms**

394
million PLN*
Total average reduction
of socio-economic
costs of **noise**, over a
period of 10 years**

2.56
billion PLN*
Total average reduction of
socio-economic costs of
air pollution, over
a period of 10 years**

Effective use of resources

In consideration of contemporary challenges of sustainable development tied to the exhaustion of natural resources, climatic change and excessive environmental pollution, Solaris **is venturing a number of measures to minimize the negative impact on our environment.**

Supporting the implementation of these endeavours are homogenous environmental

management systems as well as devices and technologies that reduce the scale of negative impact. Furthermore, Solaris pays huge attention to related areas, such as the improvement of energy efficiency and the rational use of existing energy resources in view of an increasing demand for energy.



One of the flagship investments Solaris has made recently was the plant extension in Bolechowo (near Poznań). The facility is used for the production of new-generation, lightweight city buses. Completed in 2016, the plant overhaul enabled increased output and improved the effectiveness of certain processes.

This investment has yielded the expected results. In spite of an **increase of the site area by nearly 40%, power consumption has risen by merely 5.8%.**

In fact, after the launch of the plant extension the **energy intensity** of the whole plant **contracted by 24%** compared to 2015.

The achievement of this result was possible owing to the application of new ventilation, heating, air-conditioning and lighting technologies.

In the years 2014-2016 **spending on plant expansion amounted to 54.1 million PLN***, which constituted nearly 30% of the total investment budget of the company.

The average annual outlay settled at **18 million PLN.***

* 1 PLN = 0.23 EUR.



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Assumptions to the report and research methodology

This brochure constitutes the summary of a comprehensive study of the effects of economic, social, and environmental activities of Solaris Bus & Coach, conducted by Deloitte Advisory Sp. z o.o. in the period of January-February 2017. The study covered several dozen

impact indicators in three crucial areas, and it also contained a section with historical data, encompassing selected issues from the 20-year business history of Solaris Bus & Coach S.A.

Study assumptions:

Economic impact indicators were calculated for 2015 only, whereas environmental and social indicators as well as historical data cover the year 2015 and previous years.

Calculations are based on data provided by Solaris and data from external sources.

Methodology:

The economic effects have been calculated using a model based on the Input-Output tables for the national economy.

The total economic effects demonstrated in this brochure are the sum of direct, indirect (generated in the supply chain) and induced economic effects (generated by employee salaries).

The presented comparisons are based on publicly available statistics.

The data used in the study was provided by Solaris Bus & Coach S.A. or has been obtained from publicly available sources.

