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Multidisciplinary Education on Standards for Sustainable Development: Challenges for Universities

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29TH ANNUAL SESSION, UNECE WORKING PARTY ON REGULATORY COOPERATION AND STANDARDIZATION POLICIES (WP.6)
GENEVA, SWITZERLAND, 20. – 22. NOVEMBER 2019

OUTLINE



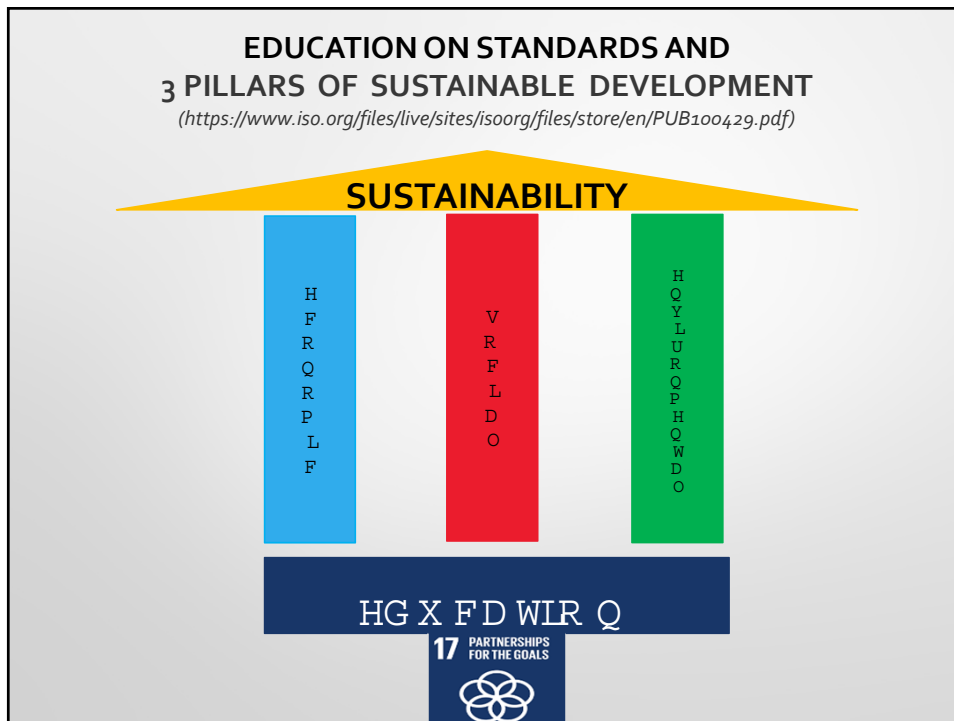
- The Sustainable Development Goals: 3 Pillars of standardization
- Economic, Societal and Environmental issues and attitudes
- Potential streams of standards education for sustainable development
- Future challenges: Actions are needed and possible

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UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS
and the number of ISO standards directly applicable to each goal

GOAL 1		NO POVERTY	67
GOAL 2		ZERO HUNGER	67
GOAL 3		GOOD HEALTH AND WELL-BEING	379
GOAL 4		QUALITY EDUCATION	75
GOAL 5		GENDER EQUALITY	51
GOAL 6		CLEAN WATER AND SANITATION	127
GOAL 7		AFFORDABLE AND CLEAN ENERGY	151
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GOAL 11		SUSTAINABLE CITIES AND COMMUNITIES	235
GOAL 12		RESPONSIBLE CONSUMPTION AND PRODUCTION	288
GOAL 13		CLIMATE ACTION	210
GOAL 14		LIFE BELOW WATER	100
GOAL 15		LIFE ON LAND	140
GOAL 16		PEACE, JUSTICE AND STRONG INSTITUTIONS	65
GOAL 17		PARTNERSHIPS	X

Source: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>; www.iso.org



WHY DO WE NEED STANDARDS EDUCATION FOR SUSTAINABLE DEVELOPMENT?

The importance to understand the sustainability concept:

- Economic sustainability
- Social sustainability
- Environmental sustainability

FOCUS ON THE ECONOMIC IMPACT OF STANDARDS

1. Many different standards = many different impacts on growth
2. How to measure these impacts and where do we start?
 - The economic impact is not just GDP – economists also research e.g. well-being and environmental impact
 - For example, pollution standards might reduce GDP short-term, but improve well-being (short and long-term)

KEY THEMES

- 1) Don't treat all standards as one homogenous concept
- 2) Standards development
 - Roles of institutions
 - Roles of private consortia
 - Emergence of de facto standards (e.g. Windows)
- 3) How do we measure the impact of standards? Can it always be done? Should it always even be attempted?

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SOCIETAL IMPACTS OF STANDARDS

1. Decide on what measures to use
 - E.g. air quality, mortality/injury rates
2. Statistical indicators and surveys measuring wellbeing are a more general measure
3. "Public interest" is probably too vague
 - In reality the public is not homogeneous
 - There are the interest of the young and the old, men and women, the rich and the poor, city dwellers and the rural population.

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ENVIRONMENTAL ISSUES RELATED TO STANDARDS IN COURSES AND RESEARCH

- Environmental standards, in addition to their primary purpose of improving or at least preserving the quality of the environment (Yuan et al., 2017).
- They also ensure the safety, reliability and good quality of products, processes and services, efficient production, cost reduction through competition, support regulation and promote innovation (Hatto, 2010; Liao, 2018; International Organization for Standardization (ISO), 2019a).

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ENVIRONMENTAL STANDARDS

     	<p>Attitudes towards Environmental Issues: The Potential Role of Standards</p> <p>Marta Orviska, Jan Hunady and Denisa Mlynarova</p> <p>Faculty of Economics, Matej Bel University, Tajovskeho 10, 975 90 Banska Bystrica, Slovakia marta.orviska@umb.sk; jan.hunady@umb.sk; denisa.mlynarova@umb.sk.</p>
<p>24th EURAS Annual Standardisation Conference – Standards for a Bio-Based Economy –</p> <p>13 – 15 June 2019, Rome, Italy Venue of the Conference: LUISS University of Rome, Department of Law, Viale Paremo 11, 00198 Roma (Aula Nocci)</p>	

*This paper examines the potential role of environmental standards in fighting air pollution and waste disposal problems. It also analyses factors affecting the environmentally-friendly behaviour of citizens in their daily lives, and their attitudes towards EU environmental legislation and helping non-EU countries improve their environmental standards. The paper uses panel and cross-sectional regression analysis based on available secondary data retrieved from Special Eurobarometer survey and Eurostat database. **The results indicate that ISO environmental standards can be beneficial especially for reducing CO2 emissions and for recycling activities.** Respondents show a mostly positive view of EU environmental protection legislation and standards enforcement. Women, managers, and those interested in political affairs are more in favour of environmental standards legislation.*


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THE MOST SIGNIFICANT ISSUES REGARDING TO POLLUTION IN EU ACCORDING TO EUROBAROMETER DATA

	Air Pollution	Waste	Water pollution	Agricultural pollution	Marine pollution	Noise Pollution
Austria	35,19%	39,67%	34,80%	41,52%	31,68%	16,76%
Belgium	56,90%	38,80%	29,90%	32,00%	36,70%	11,90%
Bulgaria	58,69%	47,10%	44,50%	45,75%	20,56%	13,03%
Croatia	46,67%	42,16%	30,49%	35,88%	23,24%	10,20%
Cyprus	53,09%	26,55%	29,14%	25,35%	40,12%	18,56%
Czechia	42,90%	55,01%	37,74%	38,93%	24,03%	9,04%
Denmark	38,82%	37,43%	43,61%	33,63%	45,31%	8,28%
Estonia	36,44%	51,84%	34,06%	43,20%	34,66%	10,82%
Finland	47,72%	43,56%	45,25%	19,50%	52,28%	6,63%
France	53,15%	37,30%	38,68%	44,78%	27,85%	8,07%
Germany	39,15%	34,85%	35,11%	41,24%	46,45%	11,53%
Greece	51,69%	32,04%	43,65%	46,92%	45,83%	7,04%
Hungary	47,14%	57,14%	31,52%	36,38%	15,43%	11,43%
Ireland	33,83%	47,80%	45,41%	29,94%	19,76%	12,97%
Italy	42,94%	44,11%	32,91%	38,17%	39,73%	10,22%
Latvia	46,31%	65,37%	45,51%	40,52%	34,03%	6,99%
Lithuania	51,25%	61,02%	46,66%	41,38%	21,73%	15,75%
Luxembourg	49,01%	30,16%	38,10%	37,30%	30,56%	16,27%
Malta	73,44%	55,73%	11,87%	29,18%	20,93%	14,29%
Netherlands	50,35%	40,77%	33,66%	33,66%	44,72%	9,58%
Poland	55,60%	44,90%	36,67%	17,64%	17,74%	13,08%
Portugal	39,92%	25,52%	43,41%	46,99%	13,37%	11,02%
Romania	46,36%	37,73%	38,51%	39,38%	15,42%	16,49%
Slovakia	46,77%	55,72%	34,59%	39,58%	19,28%	11,62%
Slovenia	48,78%	50,34%	33,76%	38,24%	20,29%	12,29%
Spain	46,18%	31,62%	34,89%	24,18%	25,77%	7,53%
Sweden	41,19%	28,24%	47,91%	27,65%	52,78%	1,66%
United Kingdom	42,84%	46,49%	36,11%	26,32%	28,73%	10,75%
EU28 average	46,38%	43,37%	37,62%	35,85%	30,50%	10,93%

Source: Orviska, Hunady, Mlynarova, 2019, based on the Special Eurobarometer survey no.468

- Based on our results - **ISO environmental standards could play a positive role in decreasing CO₂ emissions.** However, a higher implicit tax rate on energy appears to be even more effective in reducing CO₂ as well as other types of emissions.
- Our results also suggest that these **kinds of standards are positively related to waste management.** Countries where more firms adopted ISO 14001 certificates are also more active in waste recycling. Hence, it is likely that the support for the **adoption of environmental standards** is one of the potential ways how the policy makers could indirectly encourage business to decrease some of the air emissions.



TARGETING OF EDUCATION

- Political views, age, gender and income all impact environmentally-friendly behaviour
- Our results suggest that:
 - Progressives behave greener than conservatives
 - Younger people greener than older people
 - Women greener than men
 - High earners greener than low earners

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23rd EURAS Annual Standardisation Conference
– Standards for a Smarter Future –
Proceedings
13 – 15 June 2018
Dublin City University, Dublin, Ireland

THE ROLE OF STANDARDS IN MAXIMIZING THE IMPACT AND MINIMIZING THE DANGERS OF ROBOTS

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ANOTHER EXAMPLE

*We analysed data from Eurobarometer 82.4 (2014) survey and examined **socio-economic and demographic characteristics that could affect the attitudes to robots**. Firstly we looked in more in detail on attitudes towards using robots in surgery. People older than 39 years, less educated and those living in rural areas are more uncomfortable with this concept. Next, we use factor analysis on variables capturing attitudes towards using robots in different areas (e.g. driverless cars, elderly care, dangerous jobs) and get the factor we term overall 'robot approval'. We found that especially country specific characteristics, gender, education and prosperity are factors with an effect on overall 'robot approval'. In some demographic groups there is still rather high uncertainty and hostility regarding using robots in these new areas. Standards can play a role in reducing these fears both by limiting potential negative impacts of robots and helping give people confidence in robots. New sets of standards could comply with Isaac Asimov's (2004) three laws of robots and the "Zeroth Law".*

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THE QUESTIONS TO DISCUSS

These are **important issues** and include:

- the standards - the incentives or barriers to online trade - in the global economy;
- what role standards play in trade, business and economic growth;
- the role of national and international institutions of standardisation in the social and economic development;
- the impact of standards on the governance or government and on the quality of the institutions;
- the impact on standards on the competitiveness of the national economy and foreign trade;

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THE QUESTIONS TO DISCUSS

- What is the role of standards in global economy?
- What is the role of universities and academics?
- The exact composition of each type of course is for discussion.
- What are the strengths and weaknesses of standards education for sustainable development?
- Would the establishment of a consortium of experts representing various areas of standardization be helpful?

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LITERATURE REVIEW

- A lot of work has been on the impact of standards at the European as well as the national level.
- If there is ignorance of these studies then it suggests the first step of the study should be a *comprehensive literature review*.
- A central resource with all standards-related research should exist, so that lecturers, researchers and administrators, can be aware of what is available.

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HOW TO OBTAIN THE DATA NEEDED?

- Secondary databases
- Eurobarometer surveys of firms focused on issues related to standardisation and innovation.
- This is already done, but the questions are fairly focused on a few issues
- We need more in depth questions, and we need many more firms to participate covering a more representative sample of industries, geographies and sectors. (e.g. Blind, K., Drechsler, S., 2017)

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POTENTIAL STREAMS OF STANDARDS EDUCATION FOR SUSTAINABLE DEVELOPMENT

- Providing the human capital for the standards infrastructure of tomorrow
- Different streams for general standardization, accreditation, conformity assessment, metrology and market surveillance.
- Joint degree options in aspects of economics, engineering, pharmacy, biology, law, etc. – multidisciplinary approach
- Distance learning

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THE 17th SDG „PARTNERSHIP FOR GOALS“ - THE PLATFORM FOR STANDARDS EDUCATION FOR SUSTAINABLE DEVELOPMENT

- The importance of partnerships between SDOs at national and international levels
- The role of public–private partnerships in monitoring the needs and target groups and providing the standards education related to the SDGs
- The institutional cooperation between universities and educational institutions in providing the courses on standardization
- The cooperation between governmental bodies, academia and business environment (triple helix model of innovation)

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The possible ways forward

- Create a platform for discussion on standards education for sustainable development between representatives of academia, governmental bodies and business at a national level
- Identify the key issues to define frameworks of educational activities in standardization, providing information about training and career development in line with global trends

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THE 17th SDG „PARTNERSHIP FOR GOALS“ - THE PLATFORM FOR STANDARDS EDUCATION FOR SUSTAINABLE DEVELOPMENT

The possible ways forward

- Development of cooperation between educational institutions at the national and international levels
- Development of regional information centers, depositories of literature, databases
- Development of multi-country research centers
- Development of professional networks
- Cooperation between disciplines – interdisciplinary and multidisciplinary approach

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THE REAL ACTION IS NEEDED AND POSSIBLE

Examples of Matej Bel University in Banska Bystrica

- Standardization and International Standards course
 - Lectures discuss e.g. policy implications of standardization, current European and global development issues, and selected sustainable development goals, e.g. gender issues and the role of standards in EU integration
- International scientific conference on **Innovation, Standardization and European Policies in the Context of Sustainable Development Goals** in November 2018 - organised in cooperation with the Slovak Office for Standards, Metrology and Testing and the Representation of the European Commission in Slovakia

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STANDARDIZATION

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AND INTERNATIONAL STANDARDS COURSE

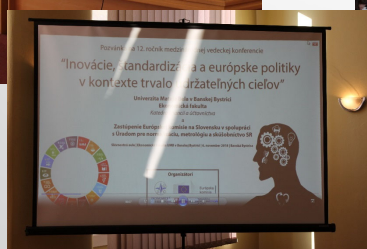
- 1) Introduction to standardization
- 2) Standards, regulation, certification, accreditation and global markets.
- 3) Economics of standardization
- 4) Standardization and innovations
- 5) National legislative and institutional frameworks of standardization
- 6) Market surveillance and the role of state
- 7) Standards and management of firms
- 8) International standardization and international cooperation in the area of standardization
- 9) Regulatory measurements and standards in finance.
- 10) International trade, standards and regulation
- 11) Standardization in the EU
- 12) International institutions in the area of standardization
- 13) Political implications of standardization

12th International Scientific Conference

on

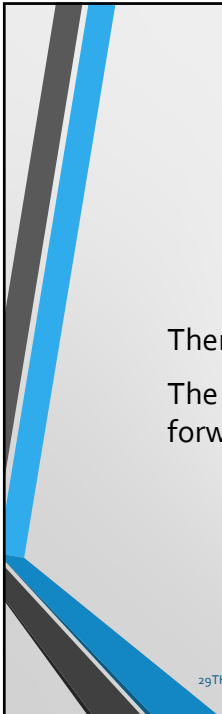
INNOVATION, STANDARDIZATION AND EUROPEAN POLICIES IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT GOALS

November 6th, 2018
Banska Bystrica



SLOVAK OFFICE OF STANDARDS,
METROLOGY AND TESTING

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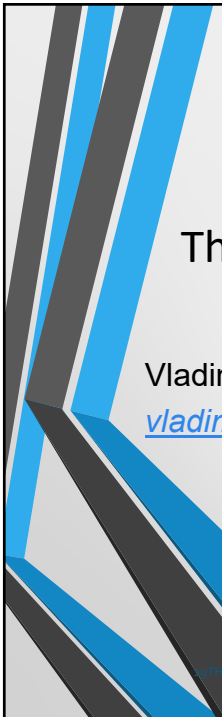


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THE NEED FOR A DISCUSSION AND THEN PROGRESS

There are many things we have left out.
The issue is important and a discussion on the way
forward is badly needed.

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Thank you for your attention

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