



---

**Economic Commission for Europe**

**Committee on Trade**

**Working Party on Regulatory Cooperation and Standardization Policies**

Twenty-second session

Geneva, 7-9 November 2012

**Report of the Working Party on Regulatory Cooperation and Standardization Policies on its Workshop on "Introducing Standards-related issues into Education Curricula" held as part of its twenty-second session \***

*Documentation:* ECE/TRADE/C/WP.6/2012/6 - Concept note for the Workshop on "Introducing Standards-related issues into Education Curricula", including a proposed model programme on standardization

ECE/TRADE/C/WP.6/2012/7 - Draft Revised Recommendation I "Education on standards-related issues"

27. The Chair said that education on standardization, as a concept, brought together education and standardization as follows. Education was the foundation of economic development for countries and a thread that accompanied every one of us from childhood, through university and during our professional careers. Standardization was an unseen foundation of society, which preserved our safety yet was often only apparent to the public during catastrophes. She said it was essential to introduce standardization into the curricula of not only technical, but also non-technical, education programmes.

28. She said that education and capacity-building were high priority activities within her organization, the Physikalisch-Technische Bundesanstalt (PTB), which had a number of ongoing projects in this domain, in collaboration with universities. In particular, the PTB had developed:

---

\* The current document is an excerpt of the document ECE/TRADE/C/WP.6/2012/2: "Report of the Working Party on Regulatory Cooperation and Standardization Policies on its twenty-second session"

(a) an international graduate school of metrology

(<http://igsm.tu-bs.de>);

(b) an online course on quality infrastructure for sustainable development specifically suited for young professionals in trade and industry ministries in countries that were members of the South Asian Association for Regional Cooperation ([www.ptb.de/de/org/q/q5/flyer/2011-12-08%20saarc%20flyer%20green%20final%20web.pdf](http://www.ptb.de/de/org/q/q5/flyer/2011-12-08%20saarc%20flyer%20green%20final%20web.pdf));

(c) guides on a number of subjects including technical regulations, the national quality infrastructure system, accreditation, metrology, etc., which are available in several languages at: [www.ptb.de/en/org/q/q5/pub.htm](http://www.ptb.de/en/org/q/q5/pub.htm);

(d) a series of studies documenting the impact of interventions on quality infrastructure on growth, trade, innovation etc. based on a common methodology ([www.ptb.de/de/org/q/q5/docs/broschueren/broschuere\\_Guide%207\\_measuring\\_the\\_impacts\\_of\\_quality\\_infrastructure\\_e.pdf](http://www.ptb.de/de/org/q/q5/docs/broschueren/broschuere_Guide%207_measuring_the_impacts_of_quality_infrastructure_e.pdf));

(e) weekly classes for young schoolchildren to introduce them to technical subjects.

29. Speaking on behalf of the Executive Secretary, the Deputy Executive secretary of the UNECE noted that the United Nations had started pressing for education on standards as early as 1970. However, more than 40 years had passed with very limited progress.

30. He encouraged Governments to do more to encourage universities and training institutions to increase and diversify the offer of courses and programmes in the area of standards.

31. He pointed to the need to promote courses that highlighted the role that standards could play both for business efficiency and for addressing major policy issues. For example: climate change and global warming, measuring progress towards a more sustainable use of resources, and integrating small and remote production hubs into global supply chains.

32. Speaking on behalf of the Minister of Education of the Moscow Region, the rector of Moscow State Regional University, explained that in the Russian Federation, Federal State Educational Standards created a common educational space. Within this framework, universities could customize their programmes to respond to the needs of students and the job market.

33. Federal State Educational Standards, he explained, did not include a requirement to include standardization as a specific subject, either as a separate programme or as a component of other disciplines. However, an analysis of curricula undertaken by the Ministry showed that standardization was taught in several universities and educational institutions but the offer was still insufficient.

34. As a result of this analysis, the Ministry would make recommendations for reform, in particular concerning the inclusion of the basics of standardization in the programmes of higher professional education as well as of bachelor's degrees. This would start with a pilot project in the Faculty of Economics in Moscow State Regional University.

35. The Secretary General of IEC said it was time for the next generation of executives, engineers, entrepreneurs, lawyers and regulators to better understand the strategic benefits of standardization. He said that tomorrow's leaders should have the competences to sit at the table where the rules for global trade are written and not let others write them instead. While education was expensive, not educating tomorrow's experts and leaders might cost economies and industries their competitive edge.

---

36. He said that Europe was currently lagging behind and that many other countries--especially in Asia--had developed strategies on education in standardization. Several European institutions were now showing their support for education about standardization. The European Council had encouraged Member States to improve the position of standardization in education programmes and academic curricula.

37. IEC was playing its part, together with ISO and ITU, to actively promote the dialogue between academic institutions and the international standards community. Every year, the three organizations held the "Academic Week" and jointly participated in the activities of the Conference of the International Cooperation for Education about Standardization (ICES).

#### **The perspective from academia**

38. The moderator of the session, the vice-president of the European Academy for Standardization (EURAS), said that standardization was starting to become a subject for mainstream courses, and was no longer only taught at a postgraduate level.

39. The Dean of the Academy of Standardization, Metrology and Certification said that the Russian Federation had a track record of more than 50 years in teaching and training on standardization. She introduced the country's system of higher education, noting that standardization was present in education curricula in the form of special modules; special professional re-training; research programmes; and PhD programmes.

40. Technical universities played a leading role in training bachelors and masters in standardization and metrology (with about 500 graduates per year) as well as quality management (with about 2,000 graduates per year). Standardization, Metrology and Certification courses were not compulsory for economists or lawyers. Economists may elect management courses which cover this subject. For lawyers, the offer was very scarce.

41. The curriculum for managers included a reasonable "Standardization, Metrology and Certification" course, as well as a number of courses related to management systems, which focused heavily on standards. Professional re-training helped fill the gaps of mainstream educational curricula and helped experts keep up to date with the developments of what is a dynamic and rapidly developing discipline. However, there was still a shortage of specialists in this field.

42. An associate professor of standardization from the Rotterdam School of Management said that this shortage was also felt in Europe, where it was due mainly to: (a) the image of standardization as a dull subject, (b) the already overloaded university curricula, and (c) the fact that few professors and deans of faculty had expertise in the subject or were aware of its importance.

43. To address these challenges, countries need to: (a) increase industry involvement, both to supply expertise to academia and to make its needs better known and understood, (b) include standardization in final attainment levels as compulsory, and (c) give teachers access to appealing examples and attractive teaching methods, such as the curriculum developed by the UNECE.

44. He added that these actions should be developed within a coherent national policy and action plan, with appropriate resources and a national steering group, including representatives of government, industry and academia.

45. A professor of Berlin University of Technology shared a success story from that university, where a growing number of students graduated from the standardization course, and simultaneously also received a DIN certificate.

46. He agreed that, in general, it was hard to introduce new courses into curricula. To compete with existing courses, standardization needed: a clearly expressed demand from

the industry; excellence in research; and the promotion of the course and subject matter within all faculties. Additional factors of success were: guest lectures, interactive presentations and close relationship to practice, including industry and national standardization bodies.

47. Speakers agreed that an action plan for including standardization into educational curricula should take into account the structure of the national standardization system and education system, resulting in an appropriate combination of a “top-down” and “bottom-up” approach.

48. Although a common format for education on standardization at the international level still appeared premature to several experts, in the future a formal common certificate could be introduced allowing experts to perform in the international standardization system. In concluding the debate, the session coordinator added that there were many free modules available online which could be used by professors.

#### **Role of standards-setting bodies**

49. The IEC General Secretary, who moderated the session, noted that standard-setting bodies were impacted by the quality of education on standardization, since educated experts would produce better standards. He said that standardization bodies provided the very subject matter for courses in standardization. For these reasons, IEC/ISO/ITU and CEN/CENELEC all promoted the dialogue actively with academic institutions.

50. The representative of ISO said that education was an important priority for his organization. This was reflected in their strategic plan. ISO encouraged university professors to participate in the standardization processes and attempted to connect to students by stimulating their interest and curiosity.

51. Particularly important initiatives were: (a) the ISO award, which honours excellence in the work of universities, (b) the WSC Academic day, (c) developing and making available a significant number of case studies on the economic benefits of standards based on a common methodology, and (d) providing access to a repository of teaching materials on standardization.

52. ISO also cooperated with the University of Geneva by organizing a “Master’s degree in Standardization, Social Regulation and Sustainable Development”. The Director of that programme presented the concept of the Master’s degree, which was unique of its kind in Europe, as it married the themes of sustainable development, participatory governance, and standardization.

53. There was more demand for the course than the university was able to fulfil, and students did not find the content dull. The course had an interdisciplinary pedagogical orientation, including sociology, economics and other areas. The programme prepared students for work in international development agencies, NGOs, international organizations, national and international standard-setting bodies.

54. The vice-president of CENELEC presented his organization’s master plan on Education about Standardization. The objective of the master plan was to increase the number of people who understood the value of standards; to increase the competency of those who wanted to participate in the standards-making process; and to bring education on standards on the political agenda in Europe.

55. The CENELEC master plan was based on the organization’s policy on education in standardization, which had been adopted in 2010, and was effected through an annual implementation plan. The document: (a) defined “education about standardization”, (b) presented the context and the challenges; (c) defined who the stakeholders were and (d) proposed main work streams and activities, both at a European level and at a national level.

---

56. The plan combined two complementary approaches: top-down actions—i.e. working with intermediaries such as universities and research bodies to increase the offer of courses—and bottom up actions, i.e. actions to directly stimulate the interest of students and teachers. It also included three work streams: build capacity; engage key stakeholders; and reach target groups.

57. It was open to cooperation with ISO, IEC and ITU as well as all stakeholders. Under the plan, in June 2012, CEN/CENELEC co-organized with ETSI in Brussels, the first European conference on education about standardization, attended by more than one hundred experts from national standards bodies, business community, academia, and authorities.

58. The Chief of the ITU-T Study Groups Department explained that in 2010 ITU had decided to open its membership to academia and at present there were 49 academic institutions were ITU-Member Bodies. An ITU Ad hoc Group on Education about Standardization had been established and had held its first meeting during the Joint ITU-GISFI-DS-CTIF Standards Education Workshop (Denmark, October 2012). A second one will be held in Kyoto back to back with the Kaleidoscope conference in April 2013.

59. Other activities undertaken by the ITU to raise awareness about standardization in the academic world were as follows:

(a) the World Standards Cooperation Academic day organized together with ISO and IEC;

(b) the publication of inputs from universities in the ITU-T Technology Watch Reports;

(c) an award for the best paper on standardization;

(d) having professors and students as observers in the ITU standards-development process;

(e) a series of lectures open to academia and students;

(f) an internship program.

### **Perspective of governments**

60. The Vice-Dean of Mechanical Engineering Department of the Technical University of Sofia gave an overview of courses taught on quality management, metrology, management systems and other standardization-related subjects. She said that the university also has a PhD programme in standardization. She stressed the role of governments in supporting education bodies to participate in the standardization processes.

61. The representative of the European Commission concurred with other speakers that standardization was an essential policy component and that education had great potential to strengthen the standardization system, with a positive impact on development and innovation.

62. Recent initiatives taken at the European level had been as follows: (a) an EC communication on industrial policy, which clearly recognized the need to increase investment in human capital and skills ([http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/index\\_en.htm](http://ec.europa.eu/enterprise/policies/industrial-competitiveness/industrial-policy/index_en.htm)); and (b) a communication on “Rethinking education”, which provided policy guidance to Member States, where standardization would be included as one of the key competences ([http://ec.europa.eu/education/news/rethinking\\_en.htm](http://ec.europa.eu/education/news/rethinking_en.htm)).

Outstanding issues at the European level included: (a) the need for increased harmonization across the EU countries, although education was a national responsibility; and (b) a strategy

to more effectively involve national standardization bodies in developing the content of educational modules on standardization.

63. A representative of UNIDO described her organization's activities in the area of capacity-building and education. The UNIDO research institute was currently developing courses on quality infrastructure, applying the "3 C" approach, which focused on competitiveness, conformity with market requirements and connectivity.

64. Additionally, UNIDO and the ISO had jointly developed a publication on conformity assessment ("Building trust"), which could be used for training purposes. UNIDO was supporting three training centres that provided educational services on testing, metrology and calibration, as well as on food testing, in Central Asia, Caucasus and the Western CIS.

65. The delegation of Belarus presented the work of the institute for qualification improvement in standardization, metrology and quality management. The institute cooperated with the national standards body of Belarus, Gosstandart, and also provided additional education for adults. It had a two-year programme for students, with a higher education diploma as well as a number of short courses. The programme included 500 hours in the class and 500 hours of work that students performed on their own. It featured courses on metrology, standardization and quality management.

#### **The way forward: novel initiatives and the UNECE contribution**

66. The moderator of the session, a professor at Hamburg University, Germany, noted the increased interest of stakeholders, including the standards-development bodies, in academic education on standardization.

67. An associate professor of Chubu University, Japan, presented her university's experience in teaching standardization. She then presented two board games that had been entirely developed from concept to final product by the students. One was aimed at familiarizing the public with symbols related to environmental standards; the other at showing the role of standards in everyday life. The two games – which many delegates had played during the lunch break - were given as a gift to the UNECE secretariat from the students of the Chubu University.

68. A representative of Porto Polytechnic Institute, Portugal, presented the master's degree programme of the Porto Institute in Integrated Management Systems, which included courses on quality management, audits and integrated management systems. One of the courses also presented the Portuguese quality system (e.g. standardization, metrology).

69. She then presented "Project Juventude", which was launched in Portugal in 2008/2009 to promote a better awareness of the strategic importance of standardization to young people and to increase their familiarity with standards, including by developing educational cartoons.

70. In France, the Ministry of Education was partnering with the national standards-setting body (AFNOR), to create a national network of trainers in standardization. To achieve the goal, it was important to provide access to standards at a very low price for educational purposes and provide teachers with valuable educational material.

71. In a written note read out by the secretariat, the Ministry of Education and Science of Latvia expressed its support for the efforts to include standardization in academic education. The Ministry also pointed out that such programmes should be voluntary.

72. A representative of the Ministry of Education of Sweden said that, in her country, higher education institutions themselves decided on the structure of educational programmes. She said that it was not up to the government to make recommendations or encourage institutions to give a special course or introduce items into existing courses.

---

Instead, other stakeholders, such as standardization bodies, the business community, etc. should express the needs in education on standardization and communicate these needs to the educational institutions.

73. Several delegations expressed support for the point raised by Sweden.

74. The secretariat then presented the “Model Programme on Standardization”, (ECE/TRADE/C/WP.6/2012/6) and invited delegations to comment on the document.

75. One comment had been received in writing from the Ministry of Education of the Republic of Moldova and was read out by the representative of that country. Expressing broad support for the document, the Ministry wished that the module on metrology could be broadened by introducing information on measurement standards, physical dimensions and units. Other aspects, in particular concerning the standards-development process and conformity assessment, should also be added.

76. The WP.6 Vice-Chair expressed his support for the UNECE model programme UNECE. He reported that Belarus had carefully considered the document and had decided to implement a standardization programme in universities.

77. The Belarus delegation then put forward several suggestions to improve the text of the document as presented by the secretariat. These would be reflected in a revised version to be distributed at a later stage. The delegation of Germany said that it found the programme to be very helpful and noted that issues related to standards and patents should be considered in the programme.

78. A professor of the Erasmus University noted that the UNECE document was a good compromise but suggested adding modules on the role of standardization in innovation, and the role of science in standardization, and more emphasis on the standards-development process.

79. A professor of TU Berlin suggested that the programme’s title should be changed to reflect that the curriculum focused not only on standards but also other elements, including regulations and quality infrastructure. He also suggested that if the curriculum were to be adapted to different audiences, the balance between the different modules should be changed accordingly.

80. In concluding the workshop, the Working Party:

- Thanked speakers and participants for their contributions.
- Decided that a new initiative on “education on standardization” should be established under the START team and entrusted the secretariat to initiate the necessary consultations to involve interested stakeholders in this project.
- Encouraged delegations to send further comments on the programme and on the text of the recommendation I by the end of December.
- Provisionally adopted the Recommendation I with a few amendments and requested the secretariat to upload it on the UNECE website:
- (<http://www.unece.org/index.php?id=30034>)
- Requested the secretariat to invite other UNECE sectoral committees and working parties (besides UN/CEFACT) to contribute to this cross-sectoral initiative.
- Also requested the secretariat and the Bureau to consider the feasibility of preparing and publishing a compilation of good practices (from governments, academia, standards-setting bodies, etc.) in this area.

