



Measurements and chemical analyses in Estonia: Trends for the coming years

29.11.2011

Ivo Leito
University of Tartu
ivo.leito@ut.ee



Europea Liit
Euroopa Liit



Eesti Arengu koostöö



MAJANDUS- JA
KOMMUNIKATSIOONI-
MINISTEERIUM



BDA
Consulting



Introductory remarks

- I will not go into the **methodological approach** of our study as this has been explained by the previous speakers
- I will also not focus on the **economic impact**, which was detailed by the previous speaker
- I will instead concentrate on **trends**



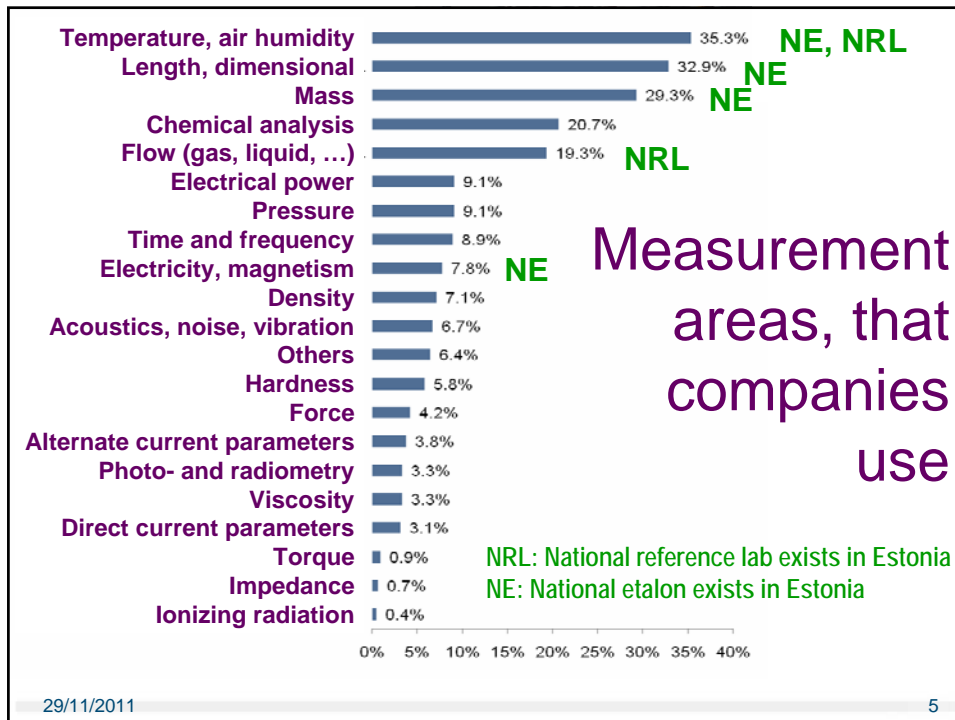
Introductory remarks



- The economic impact of metrology infrastructure is large, but **very difficult to measure**
 - There have been studies but there is no fully satisfactory approach available
 - Metrology infrastructure has many indirect benefits (externalities)



Introductory remarks

- It is possible to speak about trends only based on the **estimates** of the respondents to the questionnaire
- The study is centered on **industry**
- The results are **broad generalizations**



 UNIVERSITY OF TARTU 

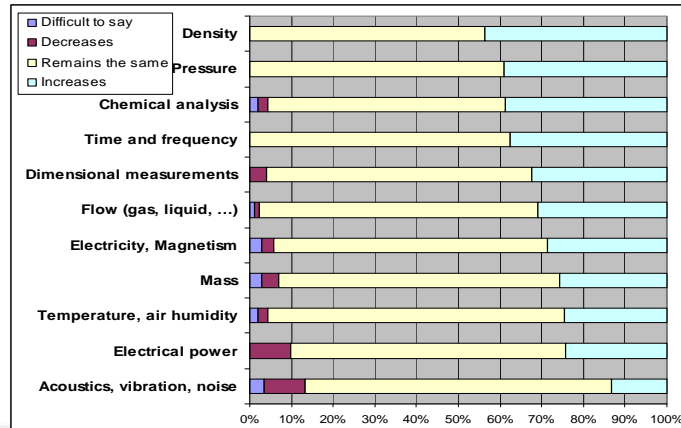
Calibration infrastructure

- In all major measurement areas well over 90% measurement instruments are calibrated in Estonia
- Reasons for calibrating abroad:
 - The service is unavailable in Estonia (33%)
 - Policy of the company (26%)
 - Insufficient accuracy or calibration range in Estonia (10%)
 - Other (27%)
 - In most cases this means that the equipment has been bought from abroad and it is more convenient to calibrate there
- Companies are in general satisfied with the Estonian calibration infrastructure

29/11/2011 6



Expected trends in measurement volumes (number of measurements performed)



29/11/2011

7



Increase of number of measurements?

Moderate increase on number of measurements expected

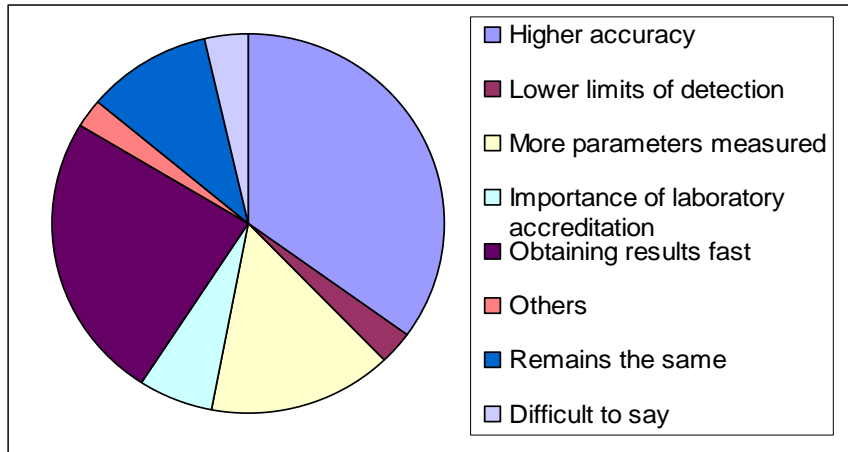
- Measurements are quite expensive
- Companies watch their costs
- Measurements are made where really necessary

29/11/2011

8



Expected trends in companies



29/11/2011

9



Necessary accuracy

There is a clear indication of the increase of the need for higher accuracy measurements

- Better quality of products
- Increase of the importance of the quality of working and living environment
- Development of high-tech production

29/11/2011

10



Promptness of getting the result

It will become more important in the coming years that the result is obtained promptly

- On-line process control
- Shorter “down-time” of production
- General increase of production efficiency



Diversity of the necessary measurements and analyses

The diversity of the necessary measurements and analyses increases

- New requirements for different parameters for the working and living environments
- More contaminants to monitor
- High-tech development



Implications from the trends

- Increase of necessary **accuracy**
 - There is real interest in measurements in the industry, not just for formal satisfaction of requirements
- Is the sector expanding or is there a move towards **higher quality**?
 - There are perhaps both, but the quest for quality seems to have an important share
 - In particular: moving from the quality control of the end products towards quality control of the whole process



Development needs

- **Dimensional** measurements
 - In this measurement area increase in both volume as well as accuracy was cited most frequently
- In some measurement areas **calibration possibilities** are insufficient (vibration, radiation, ...)



Will the importance of measurements increase in the coming years?

Yes!

- **Reasons**

- Increasing orientation of Estonian industry towards quality
 - “quality begins with measurement”
 - Moving from product quality assurance to total quality assurance
- More high-tech development and production
- The health and well-being of citizens is increasingly important

29/11/2011

15



Commercial laboratories

- The diversity of measurements and analyses increases
 - Volumes of particular measurements may even decrease
- Measurements have high fixed costs
- Difficult to achieve scale effect

Fees for measurements, analyses and calibrations tend to be high

29/11/2011

16



Education

- Necessary accuracy is increasing
- Quality of the results is increasingly more important
- Equipment is increasingly more sophisticated
- Diversity of measurements is increasing

Education of the measurement personnel is increasingly important

- **There is a shortage of competent measurement and analysis personnel in Estonia**
 - Employment outlook very good



What kind of training do the companies miss?

Response	N	%
The available training is sufficient	27	37.5%
New measurement and analysis procedures	19	26.4%
Legal aspects of measurements	14	19.4%
Issues related to accreditation	11	15.3%
Instrumentation	9	12.5%
General lab training	6	8.3%
Measurement procedures currently in use	6	8.3%
Lab safety	4	5.6%
Other	2	2.8%
Difficult to say	4	5.6%
TOTAL	72	100.0%



Education and training

- Training and education in measurement science is mainly done at University of Tartu and Tallinn University of Technology
 - Most people doing measurements study in generic programmes (chemistry, physics, ...)
 - There is, though, one specialized programme at UT: **Applied Measurement Science** (<http://www.ut.ee/ams/>)
- Sustainability of teaching is extremely important



Summary

- High accuracy is becoming more important
- Measurement volumes increase somewhat
- Quality is increasingly important
- Diversity is increasing
- Education is increasingly important