

PUBLIC CONSULTATION
EUROPEAN METROLOGY RESEARCH PROGRAMME UNDER HORIZON 2020
Analysis of the responses

1. Nature of the consultation

As part of the impact assessment for the preparation of a European Metrology Programme for Innovation and Research (EMPIR), based on Art.185 of the Treaty for the functioning of the European Union, a stakeholder consultation has been carried out. This consultation consisted of an online survey with the results being presented here and a dedicated stakeholder meeting (conclusions documented in a separate document). The survey collected stakeholder views on the state of play of the European metrology research system and the challenges it is facing. The online survey was open for submission for 12 weeks (1 October – 23 December 2012). Detailed statistics are provided in annex 1, additional comments received in annex 2.

2. Profile of respondents

A total of 624 responses have been received, with a vast majority (95%) agreeing to the publication of their contribution. Figure 1 shows the distributions of responses across the different EU Member States (in total 91% of replies), with the largest groups contributing being from France, Germany, Spain and the UK. Replies outside the EU were received from more than 10 different countries ranging from Switzerland, Turkey, Iceland, Serbia, Montenegro and Albania to South Africa, Mexico, China and Thailand.

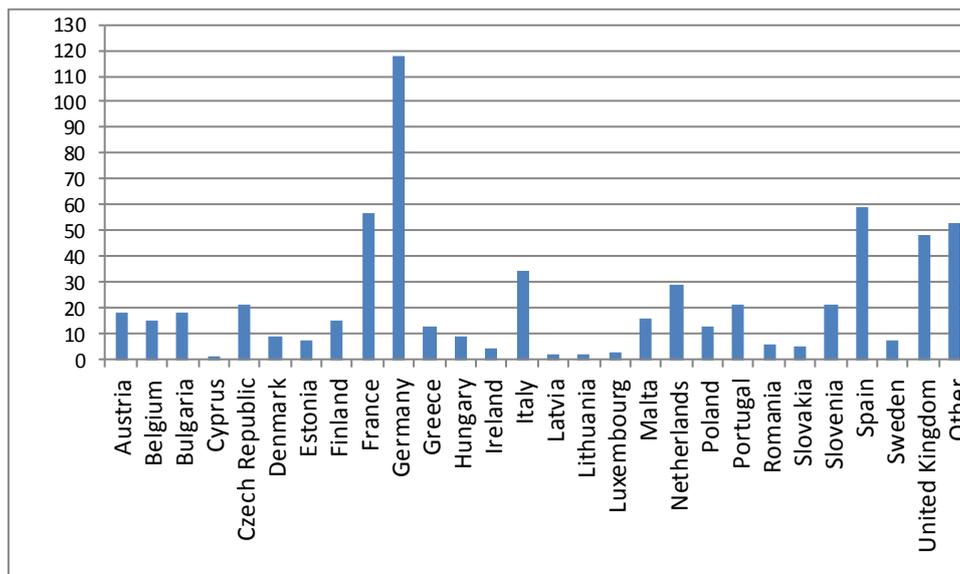


Figure 1: Country distribution of responses

72% of the responses came from organisations and 28% of the responses from individual citizens. The main contributions from organisations were received from research organisations (32%) and businesses (16%, of which 69% SMEs). Figure 2 illustrates the distribution of respondents.

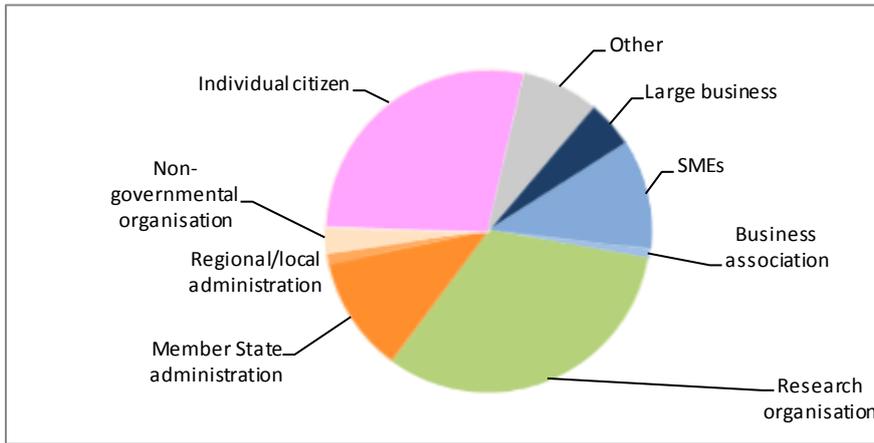


Figure 2: Distribution of responses according to type of organisation

Figure 3 shows the involvement of those responding in the different aspects of metrology, with 61% of the respondents being involved in metrology research and 51% in its uptake. 36% are involved in standardisation or regulatory work. Only 3% of the respondents state to have no involvement in metrology research at all.

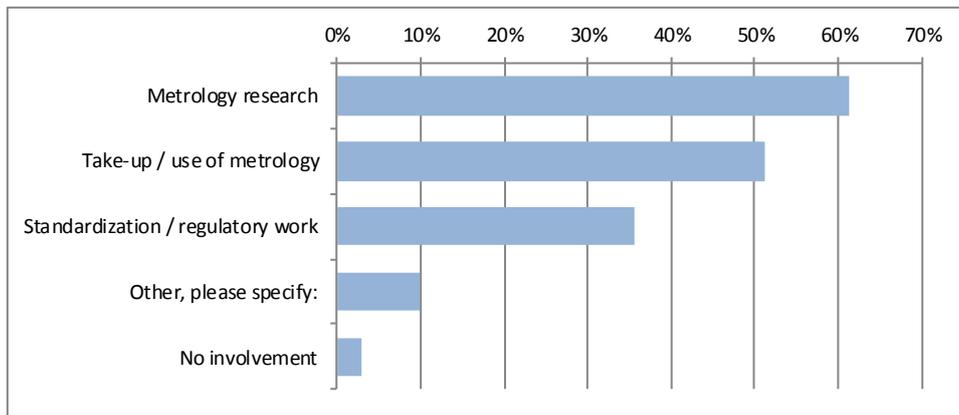


Figure 3: Involvement in the different aspects of metrology [multiple answers where allowed]

The survey reached respondents that are fairly familiar with the running initiative EMRP: 67% claim to be familiar or very familiar (figure 4). Only a minority (34%) has applied for funding from EMRP, 30% successfully (figure 5).

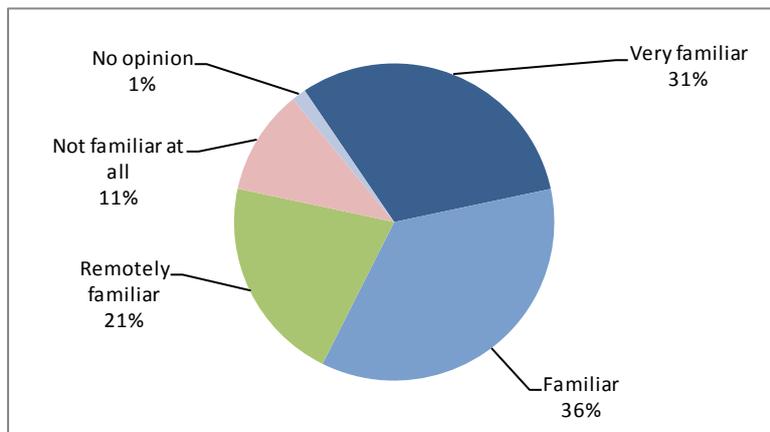


Figure 4: Degree of familiarity with the running initiative European Metrology Research Programme (EMRP)

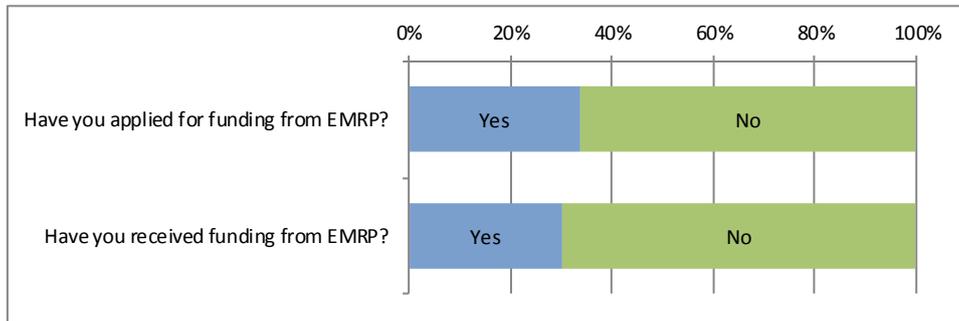


Figure 4: Respondents that have applied for or received funding from the running initiative European Metrology Research Programme (EMRP)

3. Summary of the results

3.1 Importance of metrology research

In a first step participants were asked to give their view on how important metrology research is for (a) addressing grand societal challenges such as health, energy or environment, (b) for the European economy and industrial competitiveness and (c) for European policies, standardisation and regulatory work. The overall assessment shows that respondents see equally strong relevance of metrology research for all three areas (on average 97% answer very relevant or relevant). On the importance of metrology research the replies do not show any distinctive difference for different types of respondents (large versus small research contributors to EMRP, EU15 versus EU12 or industry versus research).

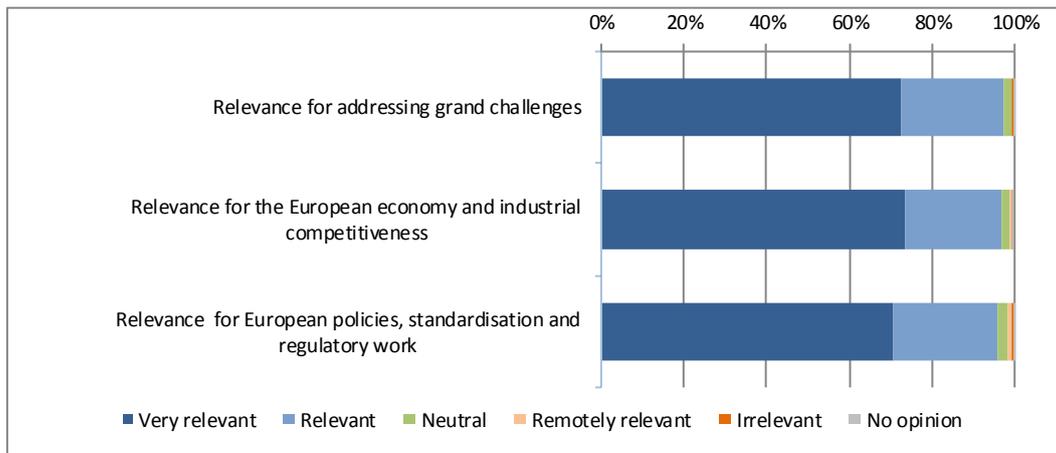


Figure 5: Relevance of Metrology

3.2 Problem definition

In order to better identify and define the underlying problems, respondents were asked to rate the importance of a number of problem statements (figure 6). There was a strong agreement with the overall set of proposed problems (on average 66% with a minimum of 50% very important or important).

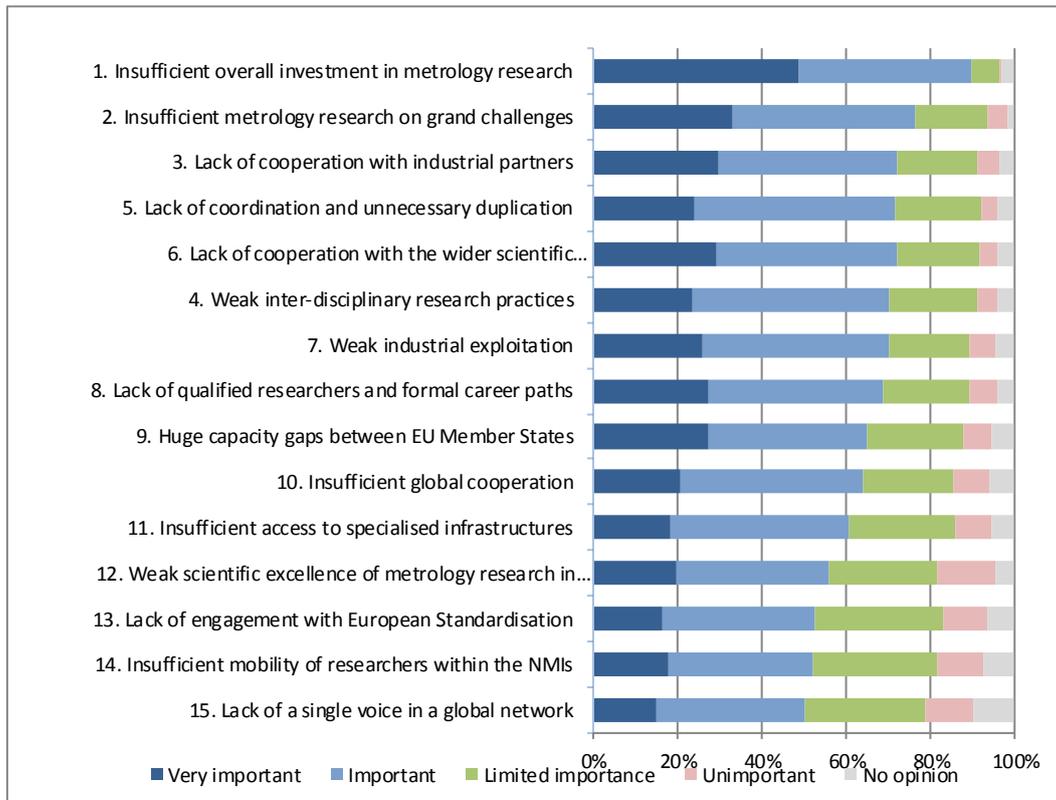


Figure 6: Problem statements for the European metrology research system in order of importance

The view on the importance of the problems showed some significant differences¹ across the different types of respondents. Compared to the researchers, **industry** attaches significantly more importance to the following problems:

- Weak industrial exploitation (+20%)
- Lack of engagement with standardisation (+17%)
- Insufficient access to specialised infrastructure (+15%)

Those **countries with small metrology research contributions to EMRP**, compared to the five biggest contributors (France, Germany, Italy, Spain, UK) attach significantly more importance to the following problems:

- Huge capacity gaps between EU Member States (+21%)
- Lack of cooperation of NMIs with the wider scientific community (+17%)
- Insufficient mobility of researchers within the National Metrology Institutes (+16%)
- Lack of engagement with European Standardisation (+13%)
- Lack of a single voice in a global network (+12%)
- Insufficient global cooperation with leading metrology research programmes (+12%)
- Insufficient metrology research oriented towards grand challenges (+11%)
- Weak scientific excellence of metrology research in Europe (+11%)
- Lack of qualified researchers and formal career paths (+11%)
- Weak inter-disciplinary research practices (+10%)

¹ Based on the difference (minimum 10%) in responses for very important or important

- Weak industrial exploitation (+10%)
- Insufficient access to specialised infrastructure (+10%)

EU12 countries, compared to EU15, attach significantly more importance to the following problems:

- Huge capacity gaps between EU Member States (+22%)
- Lack of qualified researchers and formal career paths (+21%)
- Insufficient mobility of researchers within the National Metrology Institutes (+22%)
- Insufficient access to specialised infrastructures (+20%)
- Insufficient global cooperation with leading metrology research programmes (+13%)
- Weak scientific excellence of metrology research in Europe (+12%)
- Lack of cooperation of NMIs with the wider scientific community (especially beyond physical sciences) (+10%)

3.3 Objectives for the future European Metrology Research

The survey invited the participants to provide their view on the relevance of possible objectives for a future European metrology research system. All the proposed objectives were considered relevant (minimum of 73% consider as very relevant or relevant), with the strongest support (>85%) for the following:

- Support innovation and industrial competitiveness through metrology research activities (94%)
- Support strategic metrology research projects to address basic metrology (93%)
- Support metrology related to the three Grand Challenges - Energy, Environment and Health (93%)
- Establish structured interaction of NMIs with science community to support further modernisation of the overall European metrology system in all concerned EU (86%)

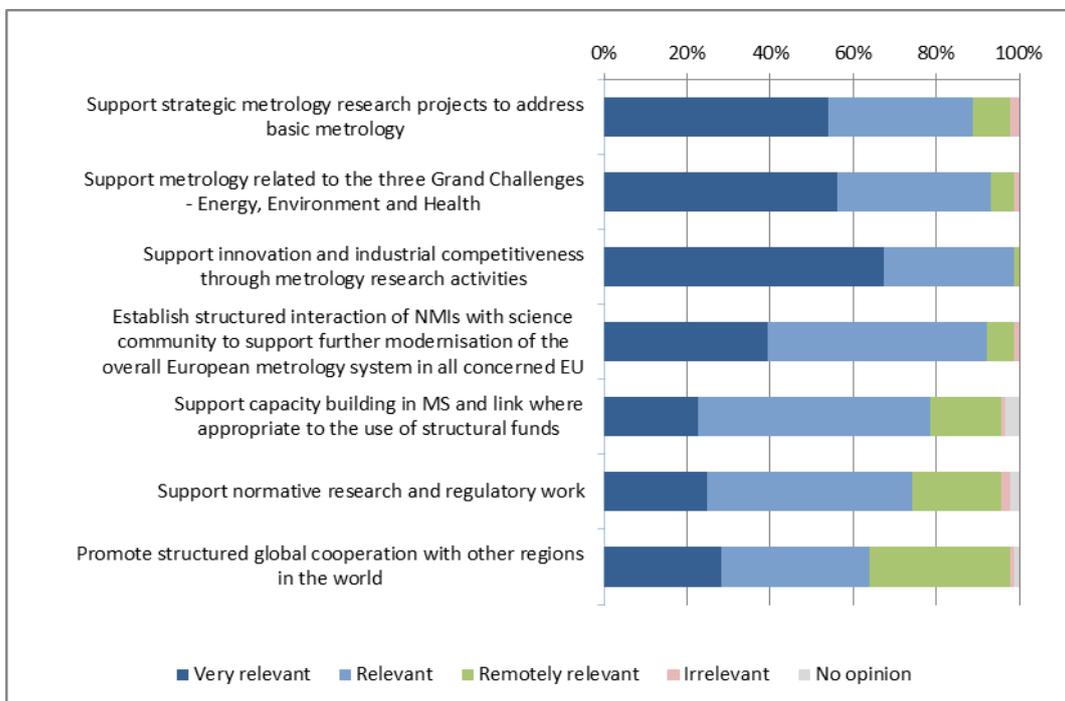


Figure 7: Relevance of possible objectives for the European metrology research system

The view on the relevance of objectives showed significant differences between the two country comparisons (small versus large contributors, EU12 versus EU15) for the objective "Support capacity building in MS and link where appropriate to the use of structural funds" (+13%, +14%).

3.4 Policy options

The survey was closed with a question that allowed participants to rate the appropriateness of the different policy options proposed:

- **Policy Option 1: "No EU co-financing action"**
Discontinue the EU participation and financial contribution to this initiative after the end of its current funding phase in 2013. Furthermore, no provision would be made in EU research policies, programmes or funding to support EMRP objectives, either in terms of financing or coordination support. Eventually light coordination through ERA-NET could be envisaged under this option.
- **Policy Option 2: "Business-as-usual"**
Same type of Art. 185 programme like EMRP. A new EU decision continuing the EU participation and financial contribution to a successor programme would be adopted based on the same terms as for the current EMRP programme with article 185 of the Treaty on the Functioning of the European Union (TFEU). In this respect, EMRP would remain focused on basic and challenge oriented metrology research.
- **Policy Option 3: "New reinforced Article 185 initiative under Horizon 2020"**
A new EU decision continuing the EU participation and financial contribution to a reinforced and broadened successor programme of the EMRP to be adopted on the same legal basis, namely Article 185 TFEU. The new programme would intend to fully exploit the EU potential in metrology in order to assure the optimal answers to societal challenges. It would support capacity building much stronger, establish closer links to standardisation and regulation and serve industrial need by addressing innovation and exploitation of research project results.
- **Policy Option 4: "JRC – direct action"**
A single European research programme to be implemented via the Joint Research Centre of the European Commission (JRC) would be set up to cover all metrology needs at European level. This programme would be a fully institutional programme at the level of the Commission services being fully independent from the existing national metrology systems and capacities.

The results are summarised in figure 8. Responses demonstrate a clear preference for the policy option 3 with a new, reinforced Art.185 initiative under Horizon 2020 (92% very suitable or appropriate). The business-as-usual option is still considered fairly appropriate (69% very suitable or appropriate). For the remaining two options the views are negative: 89% consider option 1 is inappropriate or should be avoided, and 57% conclude the same for option 4 (JRC direct action).

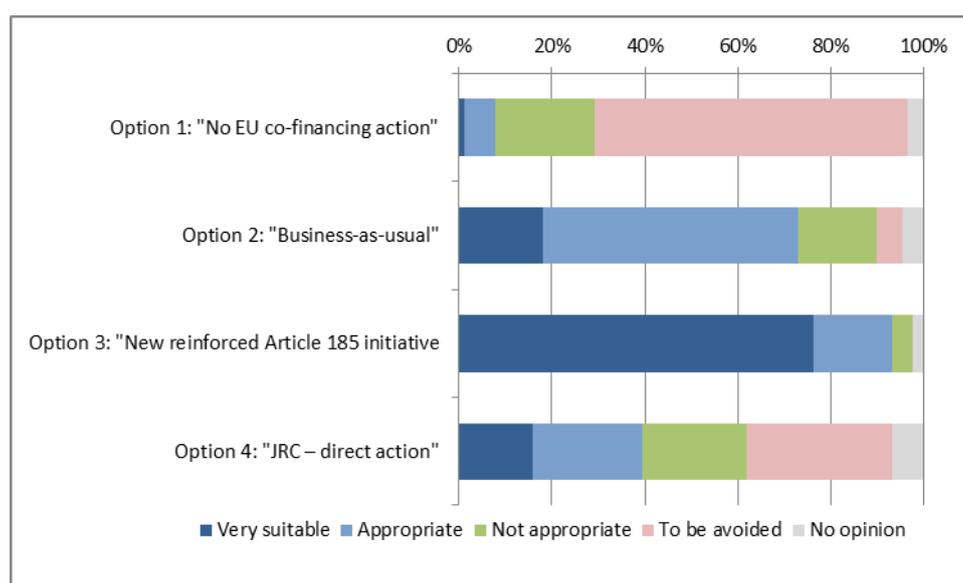


Figure 8: Rating of the proposed policy options

Annex 1: Response statistics for Public consultation: European Metrology Research Programme under Horizon 2020

Information about respondent profile

Received contributions together with the identity of the contributor may be published on the Commission's website. Do you agree to your contribution being published under your name?

	number of responses	% of total responses
My contribution can be published under the name indicated	303	48,56%
My contribution can be published anonymously	291	46,63%
I do not agree that my contribution is published	30	4,81%

Please enter your current country of residence or where your organisation is based.

	number of responses	% of total responses
Austria	18	2,88%
Belgium	15	2,40%
Bulgaria	18	2,88%
Cyprus	1	0,16%
Czech Republic	21	3,37%
Denmark	9	1,44%
Estonia	7	1,12%
Finland	15	2,40%
France	57	9,13%
Germany	118	18,91%
Greece	13	2,08%
Hungary	9	1,44%
Ireland	4	0,64%
Italy	34	5,45%
Latvia	2	0,32%
Lithuania	2	0,32%
Luxembourg	3	0,48%
Malta	16	2,56%
Netherlands	29	4,65%
Poland	13	2,08%
Portugal	21	3,37%
Romania	6	0,96%
Slovakia	5	0,80%
Slovenia	21	3,37%
Spain	59	9,46%
Sweden	7	1,12%
United Kingdom	48	7,69%
Other	53	8,49%

Whom do you represent?

	number of responses	% of total responses
Large business	30	4,81%
Small or medium-sized enterprise (SME, fewer than 250 employees)	68	10,90%
Business association	6	0,96%
Research organisation	202	32,37%
Member State administration	72	11,54%
Regional/local administration	7	1,12%
Non-governmental organisation (NGO)	17	2,72%
Individual citizen	175	28,04%
Other	47	7,53%

What aspect of metrology are you/is your organisation involved in? [more than 1 option possible]

	number of responses	% of total responses
Metrology research	383	61,38%
Take-up / use of metrology	320	51,28%
Standardization / regulatory work	222	35,58%
Other, please specify:	61	9,78%
No involvement	18	2,88%

Are you familiar with the European Metrology Research Programme (EMRP)?

	number of responses	% of total responses
Very familiar	194	31,09%
Familiar	223	35,74%
Remotely familiar	131	20,99%
Not familiar at all	67	10,74%
No opinion	9	1,44%

Have you applied for funding from EMRP?

	number of responses	% of total responses
Yes	210	33,65%
No	414	66,35%

Have you received funding from EMRP?

	number of responses	% of total responses
Yes	188	30,13%
No	436	69,87%

Relevance of metrology research

In your view, how relevant is metrology research for addressing Grand Challenges such as health, energy or environment?

	number of responses	% of total responses
Very relevant	451	72,28%
Relevant	152	24,36%
Neutral	13	2,08%
Remotely relevant	4	0,64%
Irrelevant	2	0,32%
No opinion	2	0,32%

In your view, how relevant is metrology research for the European economy and industrial competitiveness?

	number of responses	% of total responses
Very relevant	460	73,72%
Relevant	146	23,40%
Neutral	12	1,92%
Remotely relevant	2	0,32%
Irrelevant	1	0,16%
No opinion	3	0,48%

In your view, how relevant is metrology research for European policies, standardisation and regulatory work?

	number of responses	% of total responses
Very relevant	441	70,67%
Relevant	157	25,16%
Neutral	17	2,72%
Remotely relevant	5	0,80%
Irrelevant	2	0,32%
No opinion	2	0,32%

Identification of the problems

How important are, in your view, the following problem statements for the European metrology research system?

Lack of coordination and unnecessary duplication between metrological resources across national boundaries

	number of responses	% of total responses
Very important	151	24,20%
Important	296	47,44%
Limited importance	128	20,51%
Unimportant	22	3,53%
No opinion	27	4,33%

Insufficient overall investment in metrology research

	number of responses	% of total responses
Very important	300	48,08%
Important	259	41,51%
Limited importance	41	6,57%
Unimportant	5	0,80%
No opinion	19	3,04%

Weak scientific excellence of metrology research in Europe

	number of responses	% of total responses
Very important	124	19,87%
Important	224	35,90%
Limited importance	160	25,64%
Unimportant	85	13,62%
No opinion	31	4,97%

Insufficient metrology research oriented towards grand challenges (e.g. health, energy or environment)

	number of responses	% of total responses
Very important	213	34,13%
Important	272	43,59%
Limited importance	98	15,71%
Unimportant	30	4,81%
No opinion	11	1,76%

Weak inter-disciplinary research practices

	number of responses	% of total responses
Very important	150	24,04%
Important	294	47,12%
Limited importance	127	20,35%
Unimportant	26	4,17%
No opinion	27	4,33%

Lack of cooperation of National Metrology Institutes (NMIs) with the wider scientific community (especially beyond physical sciences)

	number of responses	% of total responses
Very important	185	29,65%
Important	257	41,19%
Limited importance	117	18,75%
Unimportant	25	4,01%
No opinion	29	4,65%
N/A	-	1,76%

Lack of cooperation with industrial partners		
	number of responses	% of total responses
Very important	191	30,61%
Important	264	42,31%
Limited importance	116	18,59%
Unimportant	30	4,81%
No opinion	23	3,69%

Weak industrial exploitation		
	number of responses	% of total responses
Very important	166	26,60%
Important	277	44,39%
Limited importance	115	18,43%
Unimportant	35	5,61%
No opinion	31	4,97%

Huge capacity gaps between EU Member States		
	number of responses	% of total responses
Very important	172	27,56%
Important	228	36,54%
Limited importance	148	23,72%
Unimportant	40	6,41%
No opinion	36	5,77%

Lack of qualified researchers and formal career paths		
	number of responses	% of total responses
Very important	168	26,92%
Important	259	41,51%
Limited importance	129	20,67%
Unimportant	42	6,73%
No opinion	26	4,17%

Insufficient mobility of researchers within the National Metrology Institutes		
	number of responses	% of total responses
Very important	111	17,79%
Important	209	33,49%
Limited importance	185	29,65%
Unimportant	65	10,42%
No opinion	54	8,65%

Insufficient access to specialised infrastructures		
	number of responses	% of total responses
Very important	116	18,59%
Important	257	41,19%
Limited importance	158	25,32%
Unimportant	49	7,85%
No opinion	44	7,05%

Lack of engagement with European Standardisation		
	number of responses	% of total responses
Very important	107	17,15%
Important	231	37,02%
Limited importance	180	28,85%
Unimportant	61	9,78%
No opinion	45	7,21%

Insufficient global cooperation with leading metrology research programmes		
	number of responses	% of total responses
Very important	135	21,63%
Important	269	43,11%
Limited importance	127	20,35%
Unimportant	53	8,49%
No opinion	40	6,41%

Lack of a single voice in a global network		
	number of responses	% of total responses
Very important	93	14,90%
Important	220	35,26%
Limited importance	177	28,37%
Unimportant	73	11,70%
No opinion	61	9,78%

Objectives

Do you consider the following objectives relevant for a European Metrology Research and Innovation Programme based on Art.185 under Horizon 2020?

Support strategic metrology research projects to address basic metrology		
	number of responses	% of total responses
Very relevant	342	54,81%
Relevant	239	38,30%
Remotely relevant	27	4,33%
Irrelevant	5	0,80%
No opinion	11	1,76%

Support metrology related to the three Grand Challenges - Energy, Environment and Health		
	number of responses	% of total responses
Very relevant	398	63,78%
Relevant	183	29,33%
Remotely relevant	34	5,45%
Irrelevant	3	0,48%
No opinion	6	0,96%

Support innovation and industrial competitiveness through metrology research activities		
	number of responses	% of total responses
Very relevant	390	62,50%
Relevant	197	31,57%
Remotely relevant	25	4,01%
Irrelevant	3	0,48%
No opinion	9	1,44%

Establish structured interaction of NMIs with science community to support further modernisation of the overall European metrology system in all concerned EU		
	Number of requested records	% of total number records(624)
Very relevant	261	41,83%
Relevant	278	44,55%
Remotely relevant	64	10,26%
Irrelevant	5	0,80%
No opinion	16	2,56%

Support capacity building in MS and link where appropriate to the use of structural funds		
	number of responses	% of total responses
Very relevant	163	26,12%
Relevant	298	47,76%
Remotely relevant	96	15,38%
Irrelevant	7	1,12%
No opinion	60	9,62%

Support normative research and regulatory work		
	number of responses	% of total responses
Very relevant	168	26,92%
Relevant	294	47,12%
Remotely relevant	120	19,23%
Irrelevant	19	3,04%
No opinion	23	3,69%

Promote structured global cooperation with other regions in the world		
	number of responses	% of total responses
Very relevant	180	28,85%
Relevant	274	43,91%
Remotely relevant	143	22,92%
Irrelevant	13	2,08%
No opinion	14	2,24%

Policy options

A number of policy options have been identified that should be considered. Please rate the following options:

Policy Option 1: "No EU co-financing action"

	number of responses	% of total responses
To be avoided	462	74,04%
Not appropriate	96	15,38%
Appropriate	22	3,53%
Very suitable	10	1,60%
No opinion	34	5,45%

Policy Option 2: "Business-as-usual"

	number of responses	% of total responses
To be avoided	20	3,21%
Not appropriate	130	20,83%
Appropriate	310	49,68%
Very suitable	120	19,23%
No opinion	44	7,05%

Policy Option 3: "New reinforced Article 185 initiative under Horizon 2020"

	number of responses	% of total responses
To be avoided	6	0,96%
Not appropriate	15	2,40%
Appropriate	128	20,51%
Very suitable	447	71,63%
No opinion	28	4,49%

Policy Option 4: "JRC – direct action"

	number of responses	% of total responses
To be avoided	196	31,41%
Not appropriate	158	25,32%
Appropriate	116	18,59%
Very suitable	78	12,50%
No opinion	76	12,18%

Annex 2: Overview of free-style comments received

1. The EMRP program has provided other regions with invaluable learnings on the benefits of cooperation in metrology research across national borders. A broadened next phase of the Programme with increased interactions outside the European NMI network encompassing the broader European scientific and industrial community as well as enabling greater involvement of NMIs and other key stakeholders outside Europe (eg, through access to funding) would enhance these benefits and maximise their relevance.
2. The present ERMP has several weaknesses: The bureaucracy is too heavy and one short report per year should be enough (typically 2 pages). The planned achievements of the project are requested with too much detail. In research the most beautiful accomplishments can not be foreseen in advance. The present ERMP is limited to the NMIs and do not promote the links with the Universities. From a general point of view, it is a weakness of the NMI and EU should be promote this type of cooperation.
3. 1. Spreading of the European Metrology Research Programme (EMRP) to the SIM Countries (Inter-American Metrology System) because there is a lack of knowledge of it in order to harmonise metrology policies around the world and to work cooperatively between the NMIs and other bodies.
4. For many research subjects collaboration with metrology research is very important
5. EMRP a montré son efficacité au service du développement scientifique en promouvant les coopérations des Etats membres et la mise en commun des efforts de recherche. Les autorités françaises soutiennent la mise en place d'un nouveau programme et sont prêtes à y contribuer financièrement vu son impact sur la compétitivité de l'économie européenne. Toutefois une meilleure association des Etats à la gouvernance et l'ouverture aux laboratoires académiques et industriels sont souhaitables.
6. The main focus of a follow-on EMRP should be to fund innovation within leading NMIs/DIs with the relevant expertise and specific skill sets and to develop world-leading capabilities allowing them to compete at an international level, rather than bringing all NMIs/DIs up to a similar standard which would ultimately lead to competition with each other. The value of measurement science in support of industry and legislation is clear and should not be driven too far down an academic research route.
7. Direct incorporation of industrial partners (non SME) in metrology project via funding possibilites would be feasible, in order to intesify industry/NMI cooperation for metrology research
8. as concerns Metrology for Food and Nutrition, we suggest to promote the cooperation among NMIs, Standardization Bodies and Committees for official - National and EU - methods of analysis, looking to put into a system the fragmented world of research, adopting new funding schemes to facilitate the establishment of cooperation and synergic actions also involving not-metrology-oriented research institutues
9. Policy option 4: "JRC - direct action" last sentence should be formulated in a constructive way, such as: "This programme would be a fully institutional programme at the level of the Commission services being the coordinator and integrator of the existing national metrology systems and capacities." In the present formulation it is clearly unacceptable as it does not follow the EC own ERA policy. Under such formulation policy option 4 could be appropriate.
10. It would be a good think if secondary metrology laboratories could answer directly the calls.
11. As the UK's Member Organisation for IMEKO, the InstMC plays an important role in International cooperation for the development and application of Measurement and Control, including, of course, Metrology. The InstMC has, and continues to develop, strong links with the National Physical Laboratory - the UK's National Measurement Institute.
12. Strong specialized metrology expertise in a field, which is established outside NMIs, should be better integrated/ given better access to EMRP follow-up program under Horizon 2020

13. The Opportunity to develop joint programmes between EMRP and other Horizon 2020 programmes should be encouraged. This will drive Europe's NMI's closer to industry and the academic sector.
14. CEN and CENELEC signed in June 2010 a co-operation agreement with a 5 year term and renewable to seek within the CEN and CENELEC standardization processes co-operation in the field of activities of EURAMET
15. I submit my point of view on behalf of LNH (french national metrology laboratory for ionizing radiation)
16. The EMRP projects should also allow other research metrology institutes, not only NMI, to get access to European funds for research purposes, in joint collaboration programmes involving NMI and smaller research institutes, of different European countries.
17. A metrologia sómente é lembrada quando é a causa do problema ou incidente. A pesquisa em metrologia, deve ser a base da pesquisa científica e a confiabilidade que todas as áreas sem exceção necessitam.
18. Please : less bureaucracy. The role of the EMRP MSU should be completely revised. Administrative management of JRPs is too much time consuming, from the preparation of the contract to the reportings. Lighter reports, but a real evaluation of the progress of the work with (external) experts reading the reports and attending (yearly) meetings would be appreciable.
19. Globalization, sustainable development, scarcity of natural resources, accelerating climate change, environmental awareness, minimization of energy consumption, health promotion and economically efficient medical care for people living longer and longer and fair trade among many other drivers require well-established, reliable, economically efficient, more visible and widely networked European metrology system. A system where industrial exploitation of the results gets more emphasis than so far.
20. We strongly support European Metrology Research Programme under Horizon 2020
21. Commenting from a country outside Europe, it is our view that the programme could be further strengthened if participation from outside Europe is allowed -probably limited to specific projects only, but with the opportunity for the participants to also apply for funding. This may be done in co-operation with other "unions", such as the African union through the African union commission
22. Review and acceptance process should involve greater number of experts that can cover full range of research projects. Reviewers should be more critical towards projects that seem to be "stitched together" from individualistic ideas of different NMI-s.
23. A potential successor initiative Horizon 2020 is of great importance to European research & innovation. Closer integration and coordination, especially for smaller NMIs, should be suggested, probably with mandatory participation in the proposed initiative.
24. Take ups (SMEs) should be involved in successful project decision, also.
25. High level metrology is an essential contribution to high quality science and "research and development". It is particularly essential in large european or worldwide research programs such as CERN, European Southern Observatory, space programs and world-wide fusion research program. A reinforced Article 185 initiative would be a very desirable additional contribution to the technical aspects of these programs.
26. A higher contribution of the EU to the programme would be desirable, i.e. a reimbursement rate closer to 2/3 rather than below 50%.
27. The EMRP should be enhanced in 2020. More funds should be available for research into metrology-relevant front line science, with emphasis placed on new science. More funds should be available for less advanced member states to participate in EMRP funded projects. There should be a parallel initiative to help such states develop their metrology capabilities.

28. The EMRP has made a major contribution to improving efficiency and co-ordination of European metrology research, and is envied in other parts of the world. A follow on programme, in Horizon 2020, building on this foundation will be of great value in taking this further. It could expand the scope both geographically and in terms of thesectors of the economy able to benefit.
29. Covering metrology needs at the european level is, in my mind, the right way (comparison US with NIST), but is a great change. Such a major evolution cannot be presented only through the asymptotic goal (fully institutional programme.....fully independent from the existing national metrology systems and capacities) : a way to reach the goal must be added to the policy E4 if it is to be retained.
30. Metrology which plays such an important role in our society is often underrated. Metrology acts very often in area's not visible to the broad audience (consumers) and therefore does not get the attention and appreciation as it should. So given its importance, the apparent lack of public interest and current positive developments initiated by the EMRP the continuation and preferably broadening of this initiative is vital as backbone for the current and future (European) industry.
31. More cooperation between National Metrology Institutes and industrial partners to improve quality and competitiveness.
32. Continue to simplify access to this kind of program for SMEs. A perfect example of what is excellent and perfectly efficient is the french "Crédit Impôt Recherche" procedure. Fully innovation and export oriented companies like EFS need such support. The net result is that nowadays EFS exports more than 50% of its production to China - technological products designed and manufactured in France and sold to China.
33. The Smartgrid Europe Metrology Joint Research Project is extremely important. It needs to move forward into field trials with innovative companies and communities. This needs full EU support.
34. Insufficient action is being taken to use private enterprise to undertake development of metrology in applied subject areas. Funding central government owned and funded organisations or developing policy requiring overt commercialisation underwritten by grant of these bodies is destructive of a working commercial market and must not be allowed. Central policy and facilities supported by EU funds should be strictly for cutting edge, blue sky development only, not for near market.
35. 1 - It is very important in Metrology to safeguard "biological diversity" in the approach to both basic research and application. For this reason it is absolutely to be avoided option #4 2 - I think it would be very important to give an adequate role in the new program to research which is not structured in National Metrological Instituted. In particular I refer to research groups in University
36. The EMRP should be a reinvention of the old "Standards Measurements and Testing" DG, which fostered measurement research with strong collaboration between EU centers of excellence and with a strong support for exploitation of research results through involvement in standardisation.
37. I work in the energy industry and access to good metrology techniques is crucial if we are to maximise the service life of power generation plant.
38. Metrologists should be mandatorily involved in pre-standardisation research and standardisation process whenever this process is resolving testing and measurement issues.
39. Important research topics: - Cereating excellence in analysis and assessment of surfaces and materials - Improvement of optical methods from infrared to hard x-rays for surface analysis - Development of instrumentation and methods required in the future by industry with a horizon of 10 to 15 years
40. There is lack of financial motivation for researchers in the NMI of my country to participate in the EMRP.

41. We would like the inter-laboratory comparison intensified.
42. Metrology and especially measure is used evryday by everybody. But peoples are not well informed about this subject, because we teach them that a measure is perfect, so they don't question about the relevance of what they measure (in a general way). This kind of mentality slow down competitiveness so i think we have to teach the basis of metrology at school. If we arrive to change the mentality, we will already do a great leap forward, at low cost.
43. The main issue is to ensure that the work at NMIs is relevant to industry. One way to do this is to insist that every project at tne NMIs is guided by an industrial group. This should be more than lip-service/dissemination roue but giving real authority to this group to guide the research.
44. EMRP has been working very well. However, there is a need for new initiatives in the further programme. For instance, involvement of organisations outside of EURAMET or even Europea on funded basis. This may be done through ERA-NET programmes particulalry for the organisatiins form EC TARGETED COUNTRIES.
45. Metrology, standardisation and applied measurement are vital underpinning disciplines to a large amount of EU-funded research programmes. My experience is that the EMRP has been too closed to the wider research community. While the work of the NMIs is vital and also needs strong support, the research in higher education, industrial R&D departments and other research organisations must be more closely integrated. It does not make sense to condense the EU's diverse needs into a single voice.
46. Europe needs to be more present in the metrology research and in the normative research. Collaborative projects between National Metrology laboratories are necessary. It is important since it allows to be in the leading position to propose norms in close collaboration with the european industries of new materials or products.
47. The new programme has to be more easily accessible for the countries with less developed metrology - as appliance, participations, capabilities for travelling, purchasing new specialized equipment, easy contacts and collaborations between the metrologists. Thank you! Success!
48. Please: devise simple funding schemes : the research teams in the NMIs simply lack of personnel and means for performing research towards a modern SI AND for meeting industry needs. One could create in particular postdoctoral grants because NMIs are too isolated from academic labs and from industrial labs. This would bring in NMIs researchers aware of recent advances in research, and later in the industry researchers aware of metrology.
49. The instrumentation is not a very important market however it is one of the strategic sectors for the following reasons: 1) Development of other sectors such as marine renewable energy 2) The instrumentation is required for qualification environments European Research instrumentation is one of the best in the world but the problem is the transformation to the industry which is particularly SME's
50. A balanced approach should be adopted in order to enable the EU to be in the forefront of scientific development without ignoring the huge capacity gaps between EU Member States
51. The poor knowledge on the metrological problems outside the NMIs and other metrological organizations makes me doubtful on option E.4.
52. Don't miss the core purpose of METROLOGY and its needs to provide quick responses to the present and future challenges of the Nano-Era. Beyond the legal frame, Metrology should remain supple enough to be continuously adapted and updated.
53. Our Institution provides a full support to the EMRP programme, either in its present form or in a reinforced one. We are convinced of the importance of promoting Metrology research at the European level, also favourating the interaction between NMIs, Universities and Industrial partners.
54. The need for more general research in dynamic measurements should be part of the future scope as this problem occurs in almost all metrology disciplines.

55. Attention is needed for the dwindling attention in the scientific community for fundamental physics research towards metrology. The number of dedicated chairs is reduced over the last 20 years due to underestimation of the value of these fundamental sciences for industry and economy.
56. the new program must include dissemination of metrology towards public and scholars (all levels)
57. Do not forget to support the research which deals with education in metrology at the universities!
58. Include a subprogramme on (higher) education in metrology. Aim: provide funding for the setup of course programmes on metrology to compensate for the lack of adequate education in measurement science at many European universities. This would allow young researchers to follow special tracks in metrology or even do PhD projects in this most important but not well recognized field. This possibility could lead to enhancement of the now very weak relation between NMI's and universities.
59. Need to cross link all metrology activities also to Europe 2020 goals, and focus on exploitation of results by industry
60. A good coordination should be realized in the activities of JRC and National metrology centers with the EU and Business financial support under the Horizon 2020.
61. From my point of view; should be convenient increasing interaction between Researcher from different institutes and it is not just between Department Heads as well as occur last four years.
62. Strengthen the cooperation between metrological institutes and (physics) research laboratories. Coordinate the research efforts, i.e., split the tasks.
63. From the view of financial support EMRP projects haven't been very interesting for industry so far.
64. In real scientific problems involving the natural environment, lack of measurement standards and protocols is widespread. However, the role of the metrological community in redressing this needs to be tempered with a recognition of the many other issues to be considered. My impression is that the metrological community overestimates its own importance in this context. Metrologists could benefit a great deal from working with, and listening carefully to, other scientists.
65. Important questions have not been addressed in this form, such as: *Flexibility to address really current topics of metrology. The focus on only "Energy, Environment and Health" is trivial and not helpful. Open calls would address innovation much better. *Debureaucratization: EMRP was much too much focussed on administrative/formal criteria. If you want active research in metrology, this has to be avoided. The designers of the EMRP seem to be not much familiar with cutting-edge science.
66. More implementation of metrology, as well as research projects in the field of the environment, especially in countries that are candidates for EU membership.
67. My main concern is the nearly inexistant, or at least very restrictive, collaboration with academic research. In some fields of metrology at least, neither the usual FP7 projects like STREPs or IPs or the EMRP JRP programs are appropriate, because EMRP programs only fund NMIs (except for REGs, but these are limited), and if there is too much metrology in a usual FP7 project it will easily be not eligible because of the existence of EMRP. Therefore EMRP and FP7 should become more integrated.
68. The projects overhead should be reduced.
69. Metrology indeed is important for EU's "Industrial Competitiveness" and the challenges "Energy, Environment and Health". In the Netherlands I see that basic education in the field of metrology is disappearing more and more at all educational levels. This also might be an important issue for the European Commission.

70. It is vital that Europe develops the underpinning metrology to meet the "grand challenges" of the 21st century and the new metrology to underpin new technologies. Other economies are investing heavily in metrology infrastructure (notably in the far east) and the EU should do likewise if its economy is to be competitive and flourish. Any new metrology research programme should also build in effective mechanisms for knowledge transfer to industry. There should be a strong emphasis on application .
71. 1) For technological/industrial leadership it is essential to set and enforce *unified* metrological standards as a prerequisite for worldwide economic success 2) Cutting edge metrological capabilities are necessary to assess health risks of products ever faster created upon recent research results (example: nanoscience based products) 3) Advance in metrological capabilities in the EU (also through increased funding) should *not lead* to an overregulation as seen in other EU influenced topics
72. It is desirable to have better cooperation between NMI (national metrology institutes) and universities. Also, metrology research at universities should be funded.
73. Funding should also be made available that companies (SMEs) can also obtain funding for research contributions. Presently, companies participating as member in a JRP do not receive funding, but are expected to contribute substantially by donating or in-kind contributions to the programme.
74. reduce administrative overhead support curiosity driven research adjust evaluation criteria for the different types of calls (scientific excellence is not always a suitable criterion)
75. Avoid to focus on just "sexy" issues like environment, energy, health. Metrology lives from a network of all physical quantities. It is as good as the weakest quantity involved. So, to push just a few quantities is inefficient! I would keep the programme on the European level for several reasons: We have a sufficient number of problems here in Europe to be solved, the funding money is from the EU tax payer, to include experts from Asia and US may increase effort for management.
76. A single European research Network in Metrology research should be realized starting from the outstanding results obtained in the activity of every local national institution. But who decides who is outstanding in a certain subject area? Which criteria could be used to avoid duplication of similar researches? This is the point to my opinion and I think that EMRP programme had moved in the right direction.
77. I am just retired from the Hungarian NMI
78. The determination, compilation and critical assessment of basic data on materials and processes is of extreme importance. These data should be stored in a well serviced data bank with open access. The national metrology institutes are ideally suited for this task.
79. All topics listed in table C.1 are equally important, to my opinion, but some of them I consider less of a problem than others as they are already covered by the existing structures.
80. Support within EMPIR metrology programs at academic level!! Many European countries have no single University program for Metrology Education is this field is too important to miss it.
81. Implementation of a reinforced and broadened successor programme of the EMRP would make Europe more competitive and stronger compared to the rest of the world in many areas of innovative technology.
82. Europe must compete as an entity against the Far East etc. To do so, the strengths must be supported, reinforced, so that they remain ahead of the competition. The benefits from metrology are multiple times the value of the investment (several studies have reported). The more that metrology is funded, the better the returned value to Europe.
83. Technical know how regarding challenging metrological questions is partly available outside of NMIs (national research institutes, universities). The current EMRP program does not allow for an appropriate exploitation of these resources. REG grants are a suitable tool, but not

- sufficient because they are restricted to scientists in a very narrow phase of their professional career.
84. Significant increase of support for metrology in both breadth and depth within the EU is vital, but a centralised approach risks a failure to engage and exploit local or national excellence.
 85. EMRP has produced a huge step towards coordinated work of European metrology researchers, but to further exploit their full potential requires continued EU support.
 86. The involvement of other research institutes like universities should be encouraged more and the formalities should be reduced in order not to discourage them to participate by all the paperwork. The field of metrology as a whole should be implemented more also in the education of future scientists to make them aware of the importance of comparable and traceable measurements for research as well as in product development e.g. for medical devices.
 87. Our institute is the Hungarian NMI.
 88. I would recommend more focus on applied metrology, i.e. support NMI's to provide new and updated support for industry. A part could be strategic focus another part could be more applied (read NMI's supporting with new developments for industry). It would be great if we could spend more time on the needs, research and solving problems than on formalities/proposals. SME's do not have many resources for applications and developments, i.e. new ways to promote cooperation between NMI's and industry...
 89. Statement C.1.3 is simply wrong.
 90. Strengthen basic research and exploiting smart strategies among NMIs. Extend the use of other research institutes as REGs. The current programme is too dominated by PTB, (mis)used to fit their purposes.
 91. EMRP has been highly successful and has significantly increased collaboration between researchers and research groups in different NMIs. Most significantly, collaboration even outside the scope of EMRP is now happening at a level never seen before. EMRP has also been successful in improving the scientific quality of my research work and the EMRP projects have produced results that would have been impossible to achieve without collaboration.
 92. Universities are encouraged to partner NMI applications to EMRP. Universities offer very significant capability for fundamental and applied metrology development. However, Universities do not get funding via EMRP, and are not eligible for funding via EMRP. Therefore it is not in our primary interest to take part in EMRP projects and initiatives. A better funding model is required that recognises the value of universities, allowing time/overheads to be paid.
 93. Encourage all European NMI and research institutes to participate in European research programme and support capacity building much stronger. Simplify and facilitate the procedure for funding.
 94. The BIPM is encouraged by the current EMRP programme and strongly supports a new reinforced A185 initiative under Horizon 2020, and welcomes the draft ideas already presented by EURAMET to strengthen support to innovation, to include explicit support for both European and wider international regulatory and documentary standards pillars and to encourage participation in the programme from key players beyond Europe. The BIPM sees some challenges interpreting section C1, not all are problems
 95. Research and Innovation are the key elements of progress in every society. Without progress the society on a long term is sentenced to decline.
 96. Far too long and socialized questions for people how are not that involved in metrology
 97. We need EMPIR very much. But, individual nations and their NMIs are important requirements never the less

98. In the questionnaire it stays unclear, whether I am answering as an individual citizen or as head of a metrology institute at university. What does the registration of an institution mean?
99.
 - o Priorities of the EMRP should focus on thematic policies needs and approved by an external advisory board covering all stakeholder communities and themes.
 - o Calls should be widely open (which is not the case up to now) to all relevant stakeholders whatever their status is.
 - o More "open" consultation on the real needs should be launched to fill in the work programme and the joint call contents.
 - o The information and needs must be relieved at the local, regional and national level.
100. An important area where more work is needed is environmental & climate measurement: quality control, traceability, uncertainty estimates and data continuity of observations. More collaboration is needed between the metrological community and organizations like WMO and OGC.
101. More accessible participation of EMRP and similar programs to non INMs organisations.
102. Basic research projects on metrology should go via ERC or FET. Before the present Art 185 EMRP was in place, all institutions could compete for projects and financing in the calls managed by EC; with the present status is mostly a closed club, that should be changed for next editions. EMRP should be open to any institution or enterprise competing based only on excellence, relevance and potential impact. Further more, metrology could be an important asset for EU providing Industry is present.
103. The improvement of the research network between European Universities and National Metrology Institutes is of high relevance for the successful implementation of fundamental and applied metrology research results into the European socio-economic sectors of industry, energy, environment and health.
104. It is important to homogenize the metrological capabilities between different member states. For example, Metrology in Chemistry is underdeveloped in Spain in comparison with most EU member states. Some funds should be devoted to this end.
105. Section C is incomprehensible. The "problem statements" are not "important". They might be true or false. Example: Is C1.1 asking me if I think that there is a lack of coordination, and asking if I think this is an important deficit - how do I answer? No - there is no lack, but if there was it would be important?
106. The programme seems appropriate and timely.
107. Funds should be allocated to initiatives that can reach users and organizations in need of support in metrology, and choose new lines of work truly necessary. Sort of new programs through the NMI, s means keeping a filter that will greatly diminish the effectiveness of this effort.
108. try to reduce the gap between small and big institutions
109. Some effort should be made to promote social recognition about the importance of metrology in technological progress.
110. Issue a consistent policy on Metrology. We are trying to save money with the EMRP developing close cooperation ensuring European traceability means and comparisons facilities and in the same time MSTQ support programme develop many new "NMI" for country acceding to the EU. May be EU could save money by another approach as just High calibration laboratories without research aspect.....
111. Huge capacity gaps between EU Member States can be due to focussing on different metrology areas: legal metrology is implemented in all EU Member States, but in small countries this could consume most of metrology activity efforts. For scientific metrology there is very little left. Inter-relationship and cross-disciplinary which should be more addressed in a successor programme under Horizon 2020.
112. Problem statements have the disadvantage, that you cannot distinguish between limited importance as consequence of a missing problem or as a consequence of the weighing in between problem statements. Limited importance in this case can be mainly understood that

only a minor problem is seen, e.g. in case of coordination, where the existing EMRP made a difference to the situation before.

113. As a Scientific Instrument Manufacturer (300 people in France, including RetD and Prod) supplying top research tools to Academia, we find that the sophistication of the technique needs to be backed by metrology, and we feel the need to be backed by metrology institutes for that. Whatever the advances we can make with the strong support of a national metrology Institute, it needs to be discussed, improved and encouraged into adoption by further interaction at EU level with EUMetrology Institutes
114. Evolution of the EMRP is highly desirable, ideally now designed to improve not only the joint articulation of challenges with users, but greater external participation in research and problem solving. The EMRP had rather limited engagement with the academic community (in research institutes and Universities) and this should be enhanced in a future programme. Leading practitioners in any given measurement area should be a larger part of the research solution working in combination with NMIs.
115. The investment in Metrology research is the basic support to assure the competitiveness of the European Members around the world.
116. Vitaly important to involve industry directly in these activities - which will help to reduce duplication via objective commercial assessment of options, and ensure usability of outputs.
117. EMRP needs to publish more of its key research findings in peer-reviewed journal, so that academic can appreciate their work.
118. The current system works well but needs supporting with exploitation level work that includes end user industries and intermediate institutions. Funding not dependent on national match funding would also be appropriate in some areas where benefit is not at national level.
119. The Current prog is effective in co-ordinating and gearing up investment by national programmes in challenges that are best tackled by more than 1 NMI and making EU MR competitive with USA and Japan and china etc and as such it is critical that it continues. It should at least be maintained. However, there is more that can be done coordinating skills/facilities of NMIs; increase the prog. with more focus on commercial links ; but industry must also be part funded by EU if they are to take part
120. In 2011-2012, our (health) project within EMRP was granted (HLT02 MetVes). To the best of my knowledge, this EMRP call was the first in which the theme "Health" was present. I (coordinator) have learned now that to combine EMRP (physical research) with biological / health research, imposes major hurdles in communication and know-how. For the future, I think that Health has to become a structural theme within the EMRP, so that in the future such collaborations will become easier.
121. The present EMRP programs have been successful - so why change a successful version?
122. The metrology is a tool which allows obtains comparable results in an international level. It is in the basis of different areas, like as the health, energy, economic, security and environmental questions and should be continually improved for better decisions.
123. At the national level of France, a collective initiative has been taken by environmental ministry (CGDD) for coordinating ppp action in environmental metrology - 3 "Carnot Institutes" (like Fraunhofer in Germany) have linked their forces for boosting innovation towards market and applicative use, because a lot of money is injected by the national agencies (ONEMA, ...) for new methods setting-up, but after there is a lack of application by SME.