

The ETRS89 Questionnaire 2017 Feedback and Evaluation

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the members of the EUREF TWG***

Background

- **EUREF questionnaires in the past**
 - ◆ 2005 (introduction of ETRS89, use of EUREF products)
 - ◆ 2011 (adoption of ETRS89, use of EUREF products (extended))
- **Motivation for 2017 questionnaire**
 - ◆ Release of a new realization of the ITRS, ITRF2014
 - ◆ Proposal for a new ETRF2014 (San Sebastian, 2016)
 - ◆ Discussion on Pros and Cons (San Sebastian, 2016)
 - ◆ Resolution No. 3 at EUREF Symposium 2016

Resolution No. 3.

The IAG Reference Frame Sub-commission for Europe (EUREF)

considering the link between the International Terrestrial Reference System (ITRS) and the European Terrestrial Reference System 1989 (ETRS89)

and noting the improved accuracy and stability of the origin and scale of the recent ITRS realisation ITRF2014

and further considering the significance of the possibilities for an updated ETRS89 realisation based on the ITRF2014

and regarding the EUREF Technical Working Group intention to issue a questionnaire asking for opinions of the EUREF members on this important subject

urges the EUREF community to make every effort to answer the questionnaire in detail and feed their requirements for the ETRS89 realisation back to the Technical Working Group

Procedure

• Derivation of questionnaire

- ◆ 1st draft August, 10, 2016 distributed to TWG
- ◆ 2nd draft October, 13, 2016 distributed to TWG
- ◆ Discussion at TWG meeting October, 20-21, 2016
- ◆ Iterating ...
- ◆ Final discussion at TWG meeting February, 16, 2017

• Distribution

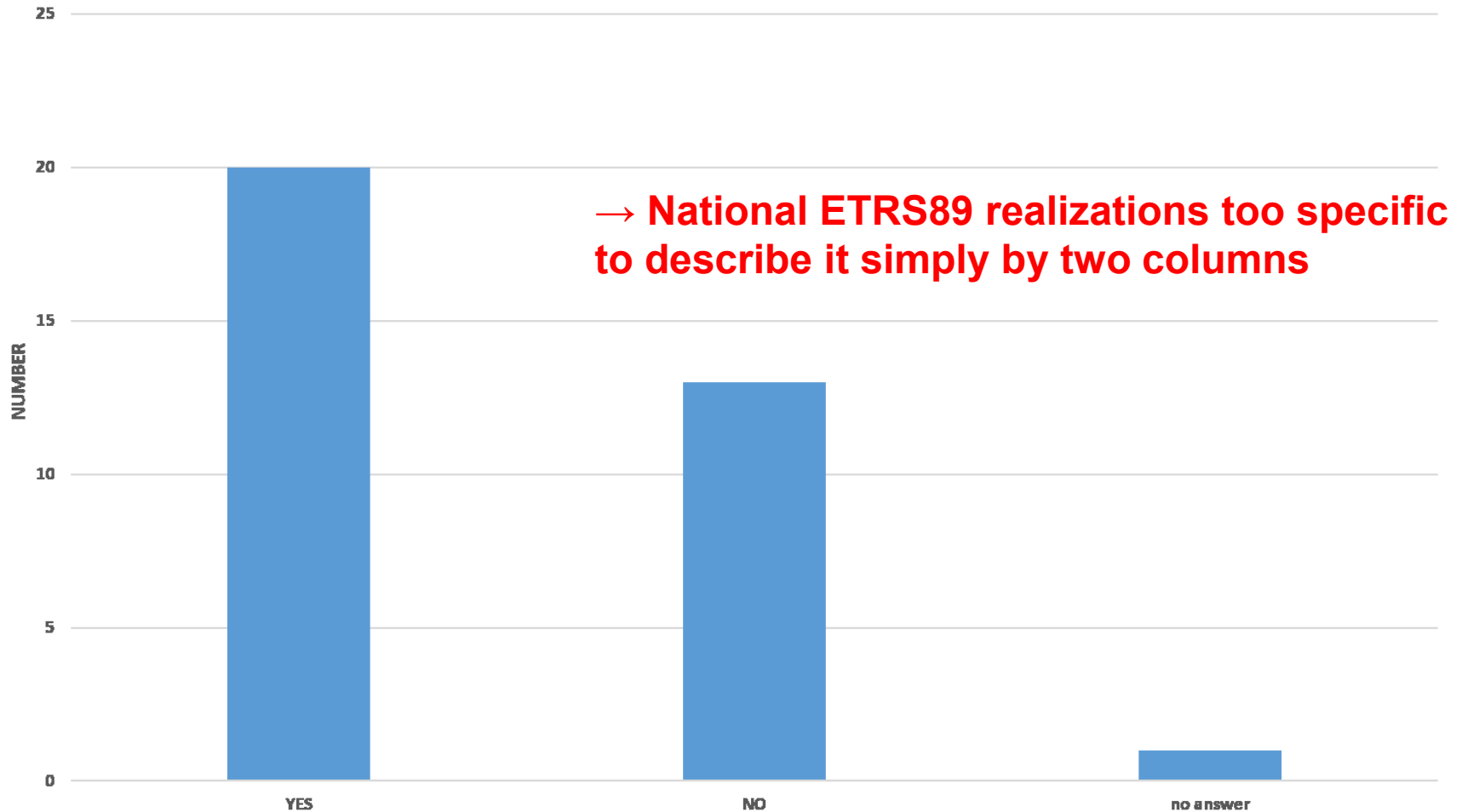
- ◆ Availability on EG web page since March, 10, 2017
<http://www.eurogeographics.org/content/euref-etrs89-realization>
- ◆ Announcement via EUREF mail No. 8938 on March, 13, 2017
- ◆ Distribution of questionnaire to EuroGeographics (EG) list (63 recipients in 46 countries) on March, 15, 2017

Feedback

- **Return of filled questionnaires between March, 17, and May, 16, 2017**
- **35 replies**
- **34 filled questionnaires from 29 countries**
- **1 saying “not applicable”**
- **32 questionnaires from NMAs, 2 from users**

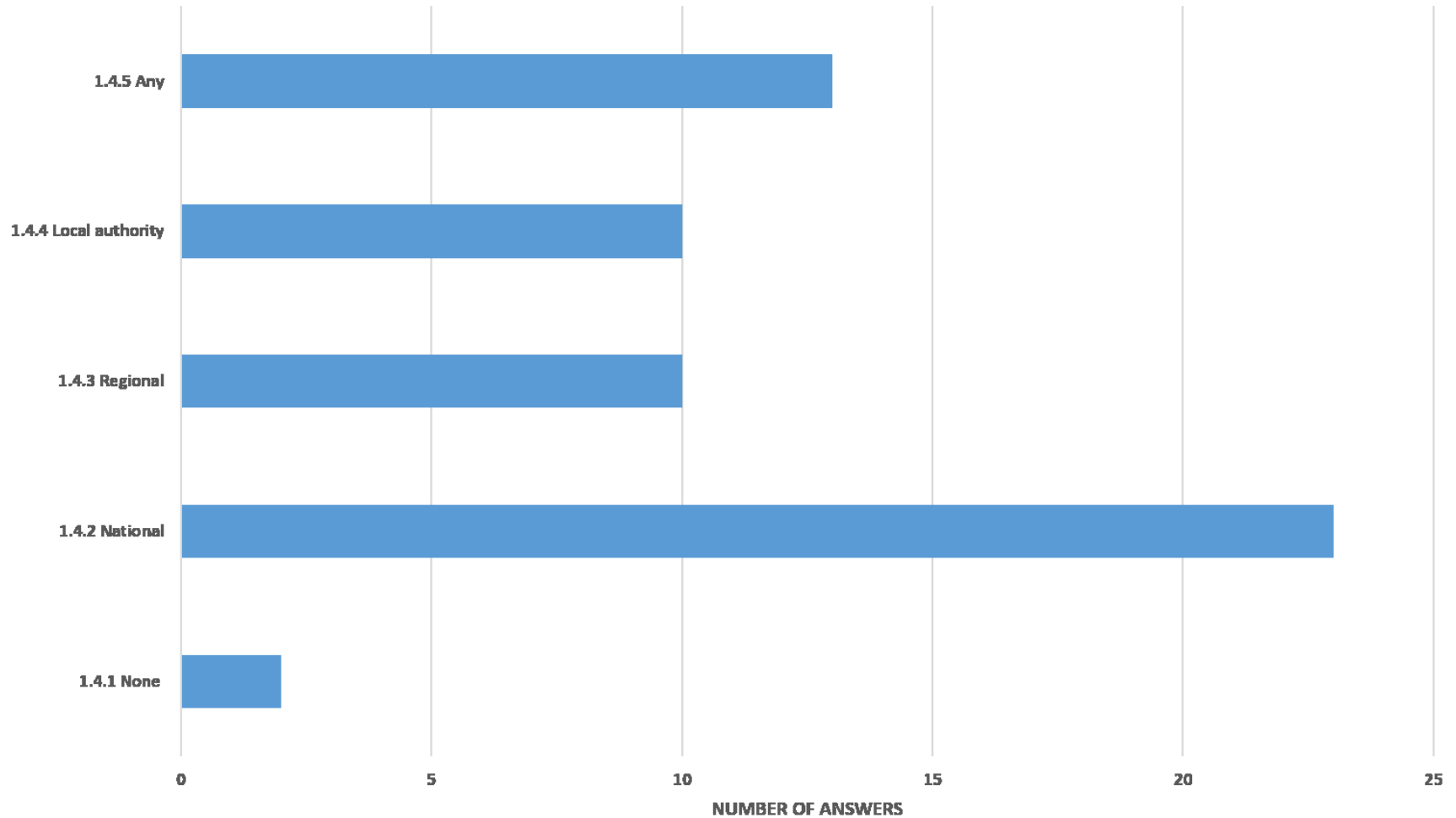
Results

1.1 Is the status of ETRS89 realization for your country as listed in Annex 2 of this document the most recent realization?



Results

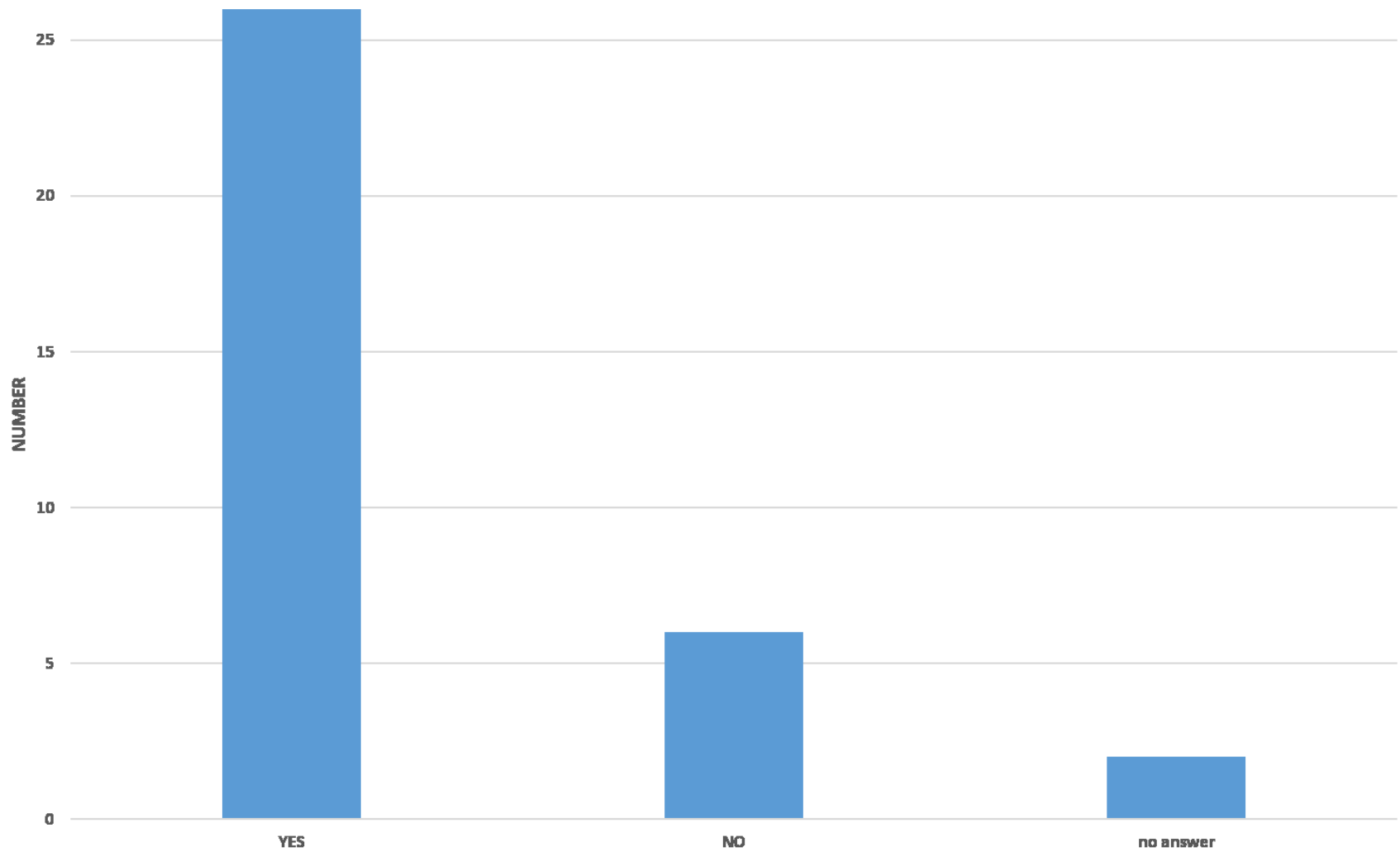
1.4 At which administrative levels is ETRS89 introduced in your country as the geodetic reference in everyday work?



Multiple answers allowed

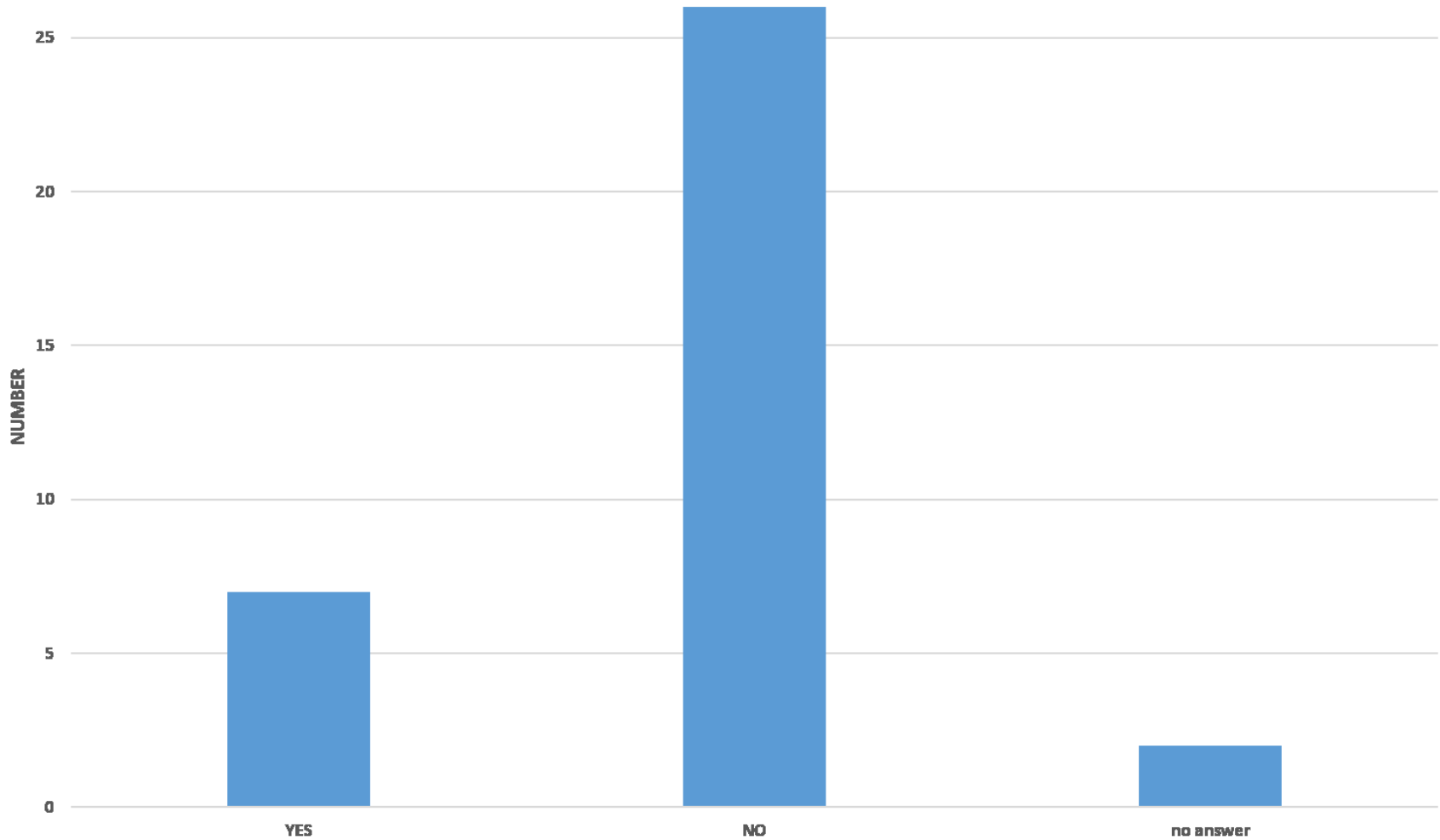
Results

2.1 Are you satisfied with the ETRS89 realisation used in your country for your applications?



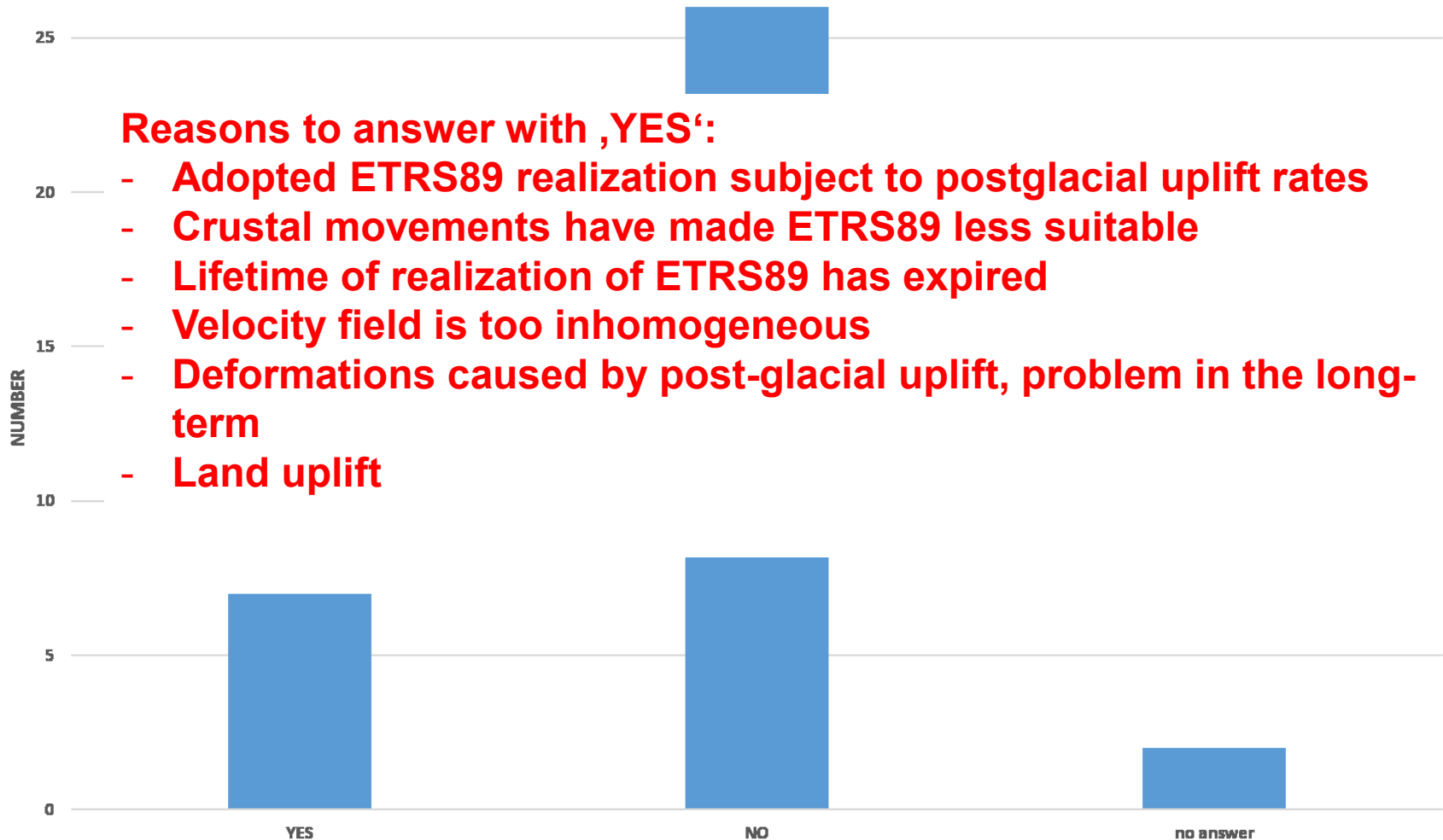
Results

2.2 Are there significant inaccuracies in the long term (e.g. significant crustal deformations) which imply that a new realization of ETRS89 would represent a significant improvement for your work?



Results

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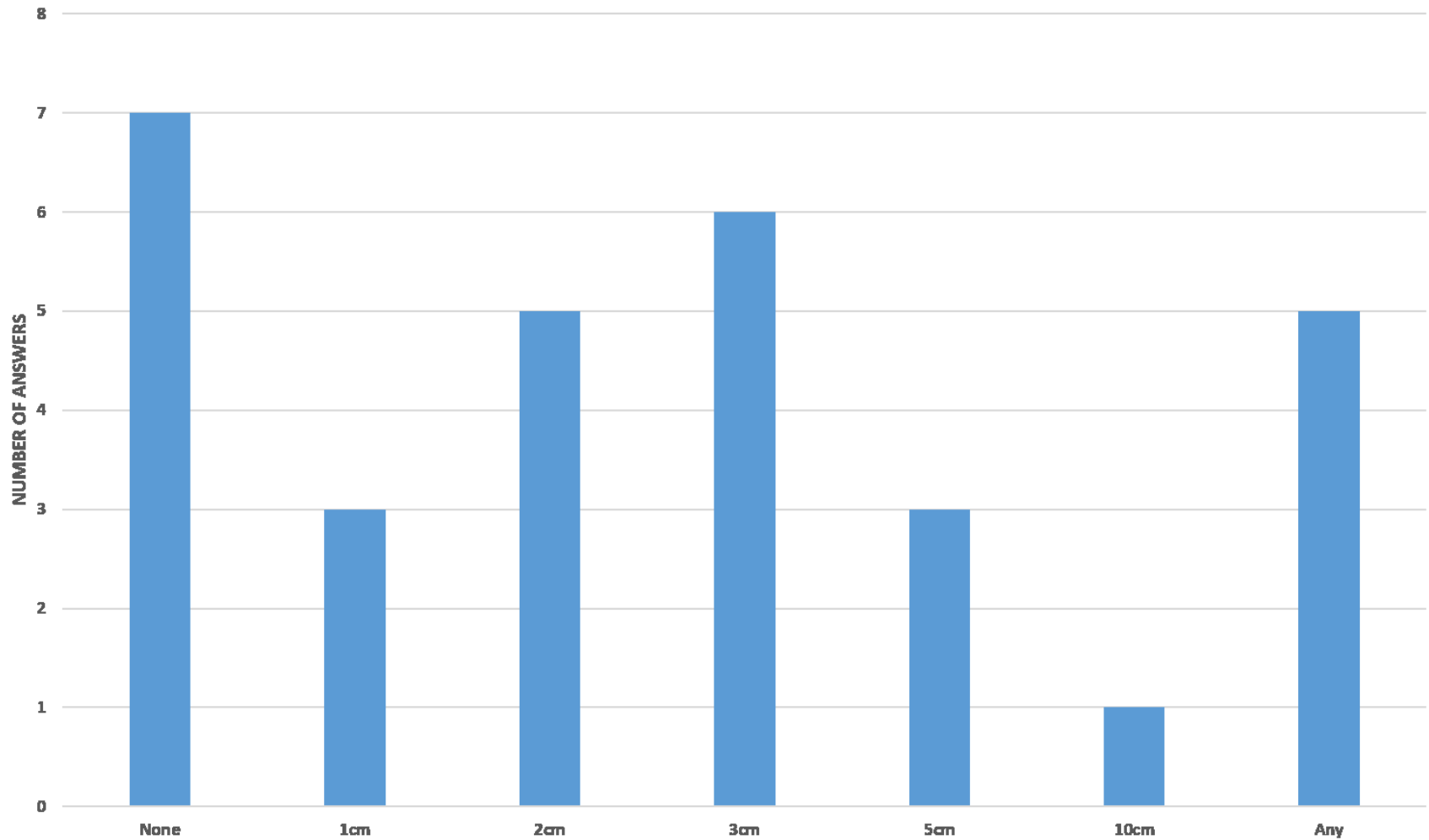


Reasons to answer with ,YES':

- Adopted ETRS89 realization subject to postglacial uplift rates
- Crustal movements have made ETRS89 less suitable
- Lifetime of realization of ETRS89 has expired
- Velocity field is too inhomogeneous
- Deformations caused by post-glacial uplift, problem in the long-term
- Land uplift

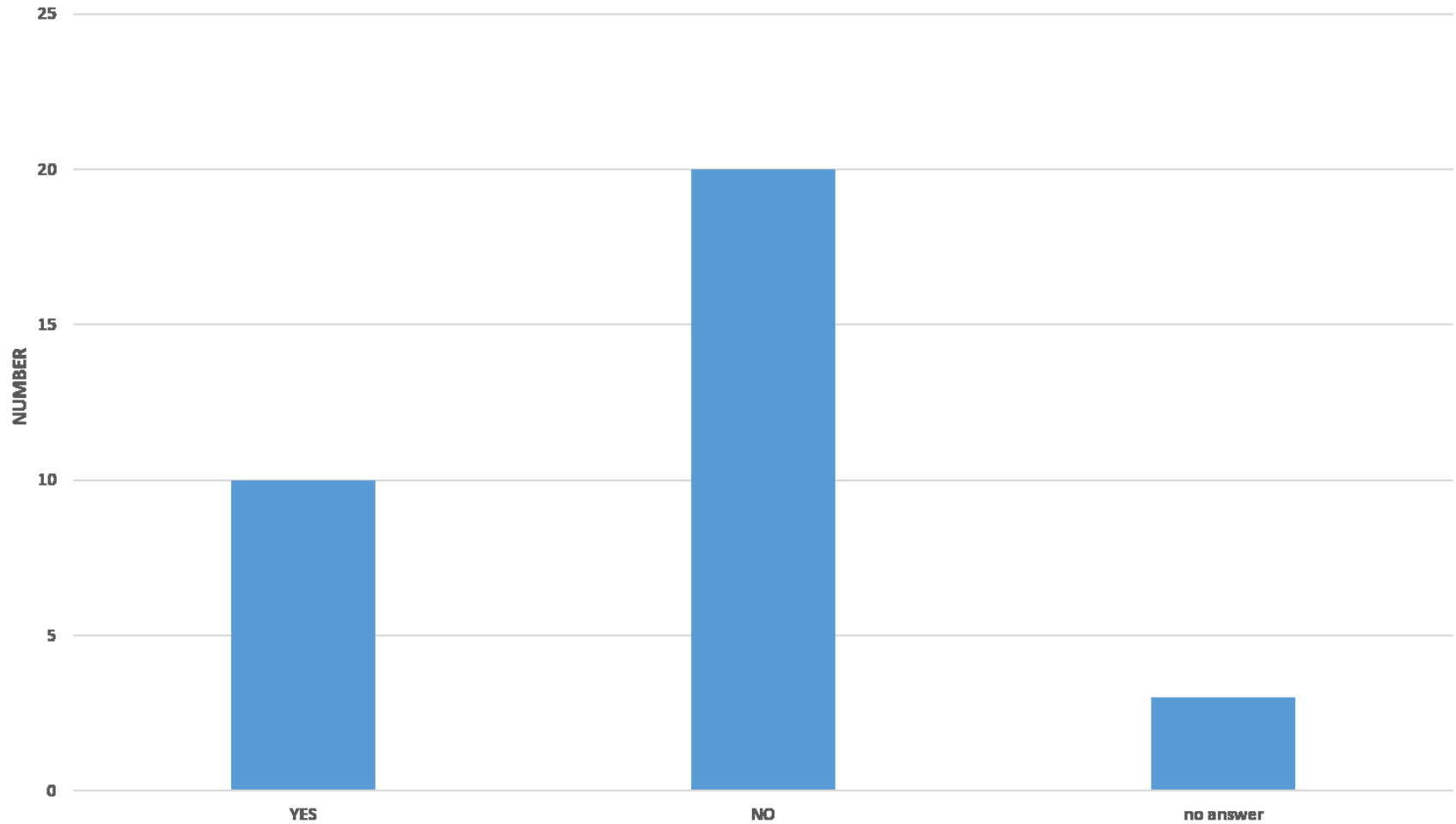
Results

2.4 What is the maximum acceptable frame change or coordinate shift you can tolerate upon change of the ETRS89 realization?



Results

2.5 Would you appreciate - or even request - a new realization of the ETRS89, based on the most recent ITRF2014?



Question 2.5 Reasons for YES

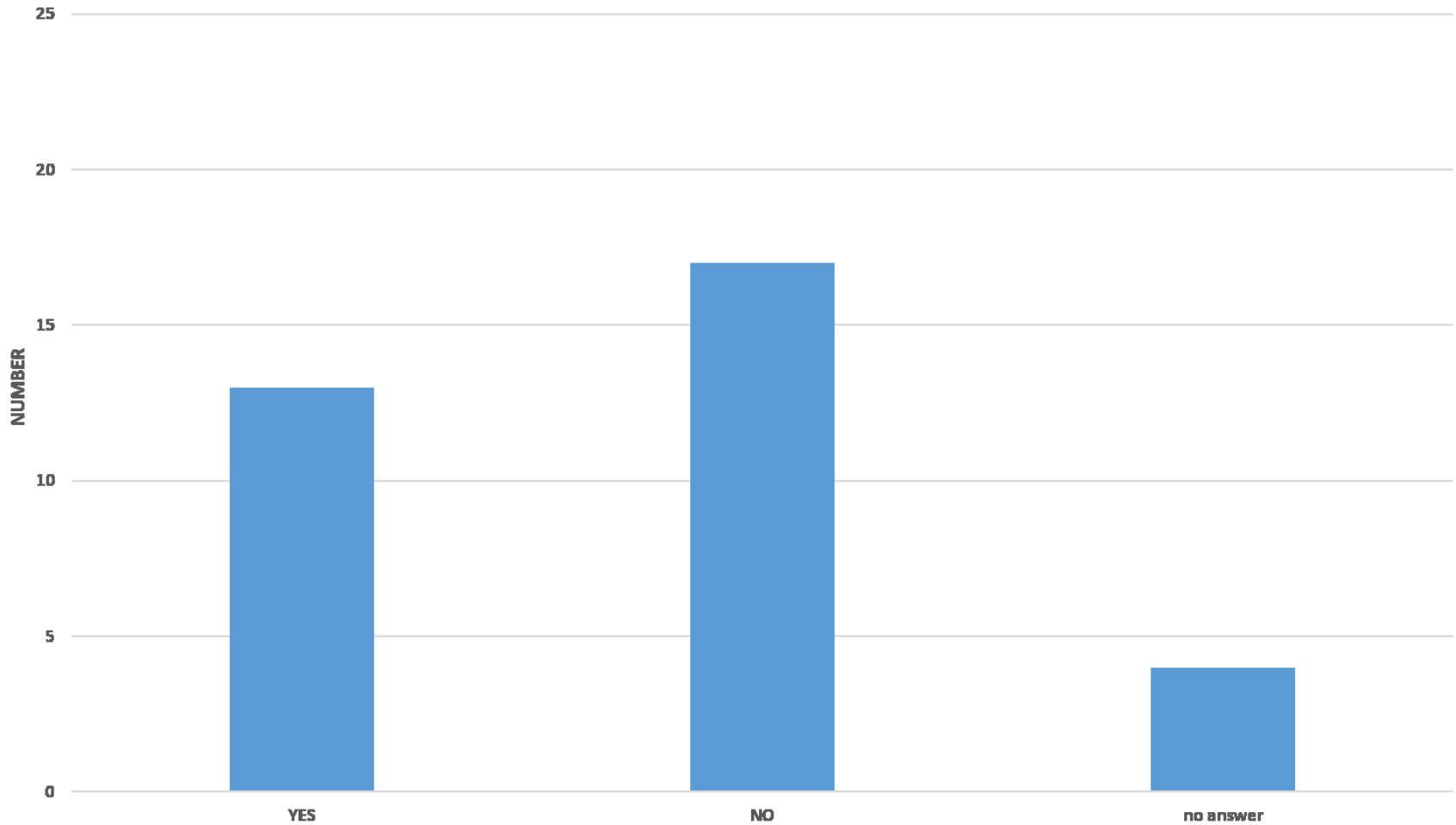
- **ETRF2014 seems more appropriated to the country due to the better definition of velocities in ETRF2014**
- **Our CORS station positions are not hardwired, we are able to change them (...)**
- **Improvement of reference system with regard to its epoch definition, use of most recent ITRF realization**
- **Improving stability of ETRF and consistency with ITRF**
- **Our national EUREF GNSS campaign just took place in autumn 2016 (the mean epoch is 2016.75) and we need to decide about the strategy for how to process the data**
- **Since we have not yet adopted a realization based on the ETRF2000, for us it would not be a major problem to change directly to the new ETRF2014**

Question 2.5 Reasons for NO

- **Latest (ETRF97) based realisation has only recently (2016-08-26) been introduced. Another change so soon is not possible.**
- **Coordinate changes of about 200.000 points would be too heavy to administrate.**
- **It would disrupt the continuity of the national reference. The users need stability over a long period of time.**
- **The ETRF2000 is, in my opinion, accurate enough**
- **(...). Another update in a short time interval is technically, strategically and economically unreasonable.**
- **The main reason against ETRF2014 is our zero tolerance for coordinate shift.**
- **User resistance to coordinate jumps. Too soon after the last coordinate change. No time to prepare and educate users.**

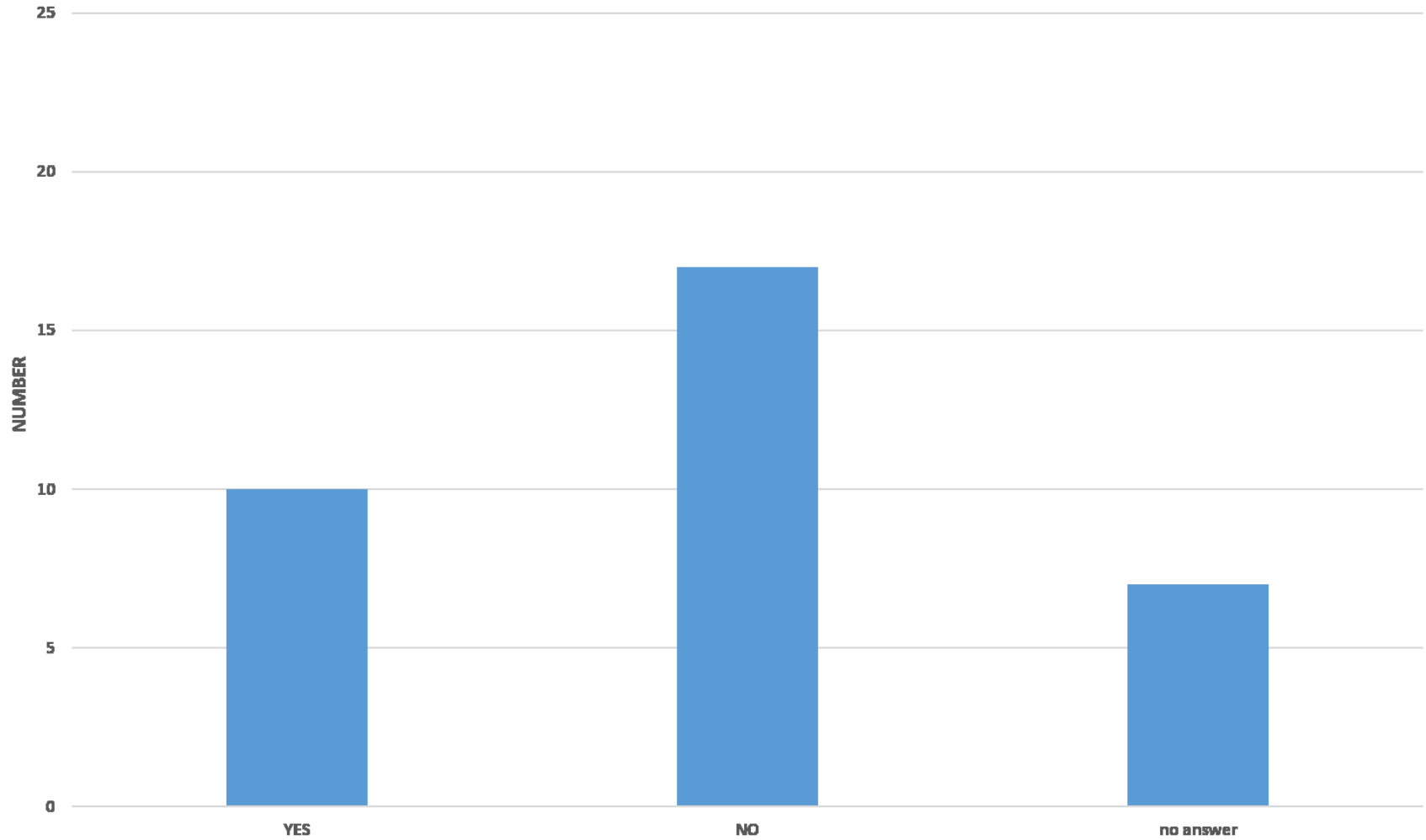
Results

2.8 Would you switch to a new ETRF2014 although your neighboring countries do not switch (possibly resulting in coordinate differences at the borders)?



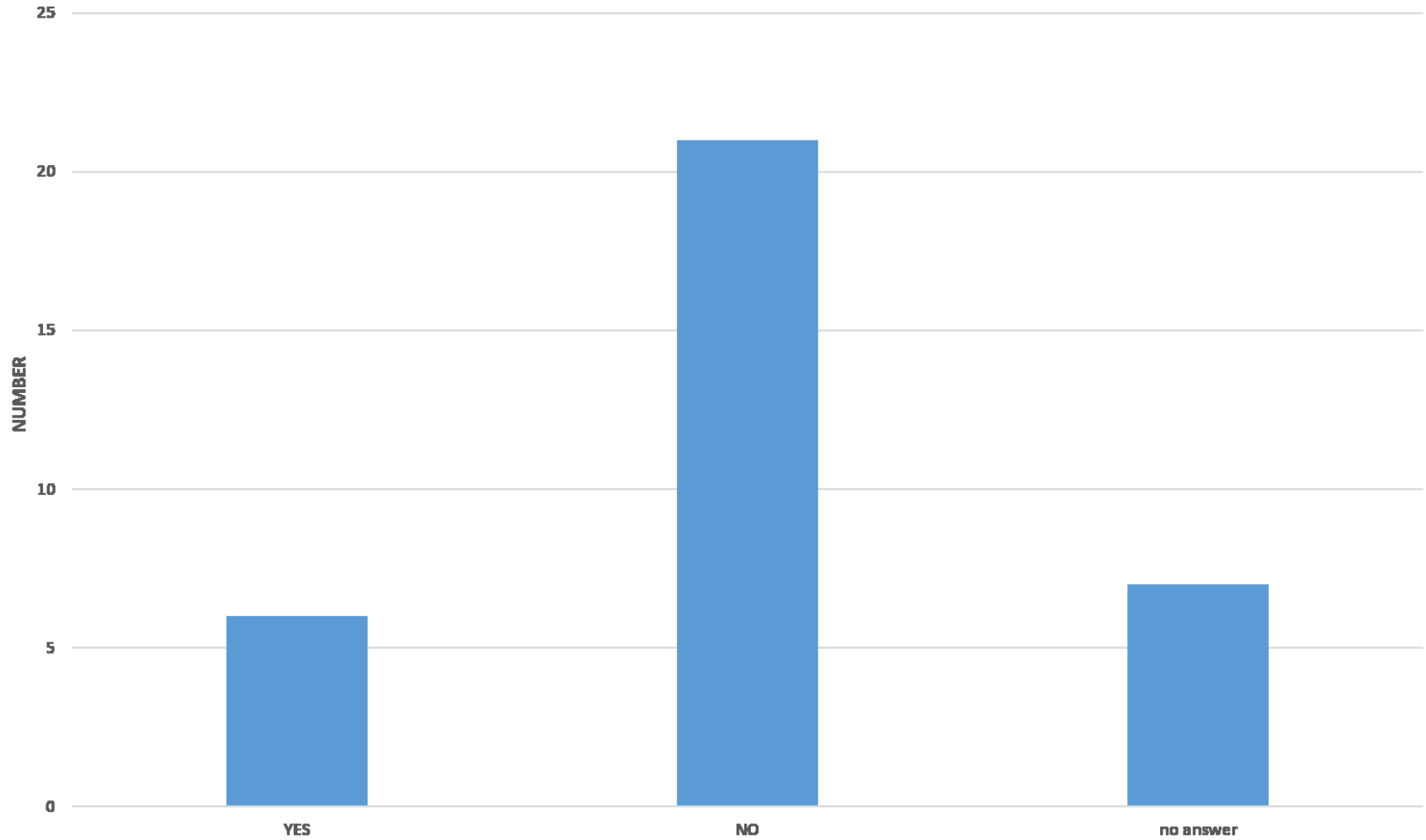
Results

3.1 In favour of an ETRF2014



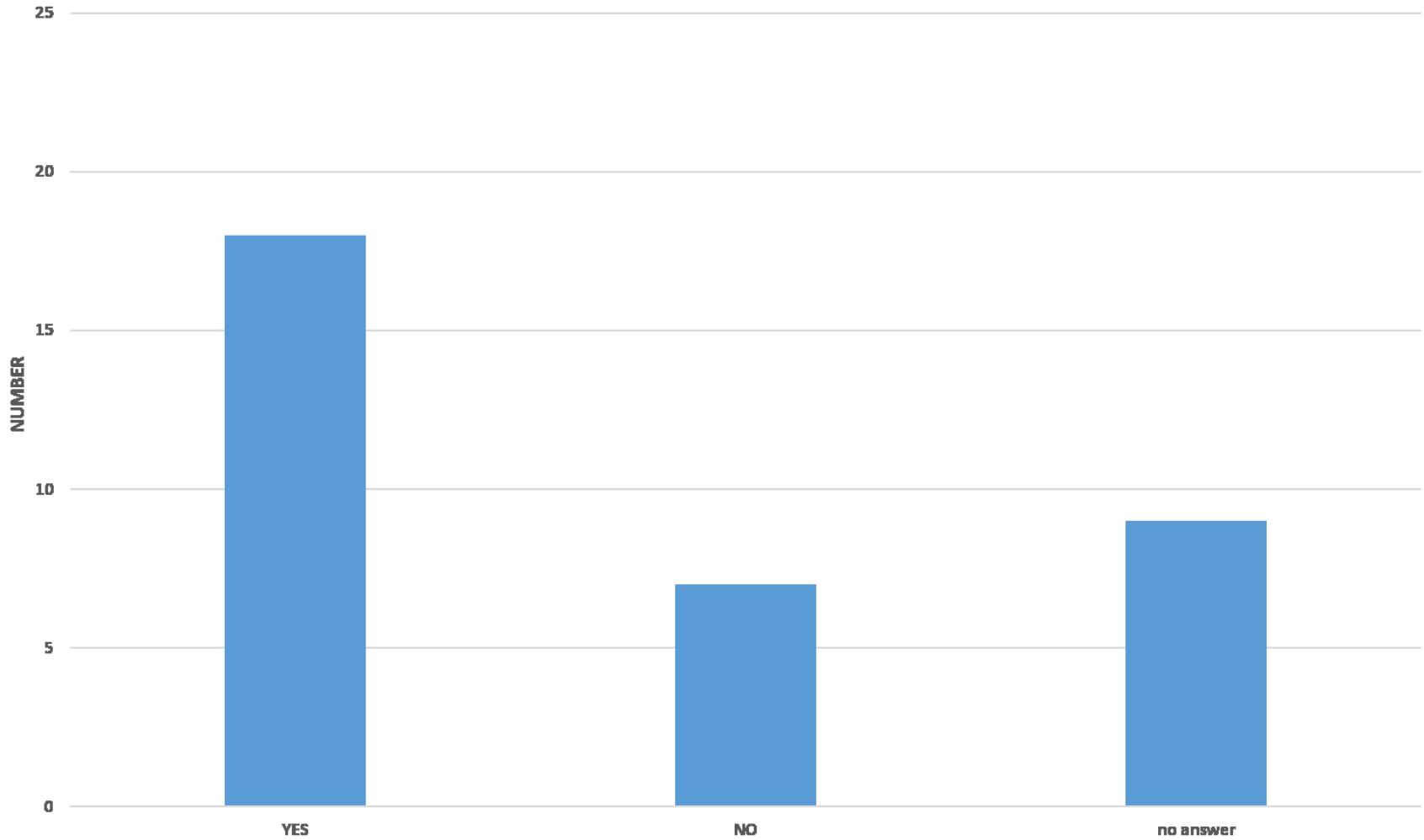
Results

3.2 In favour of an ETRF2014 with origin coinciding with ITRF2014 origin



Results

3.3 Keep ETRF2000 as it is



Section 4 “Additional Comments”

- **Publication of transformation parameters between ITRF2014 and ETRF2000 recommended**
- **Realizations of ETRS89 important also for scientific work and (pan-) European projects**
- **Only for high-precision applications ETRF2000 might be not good enough**
- **Recommendation of one frame only really necessary?**
- **Give support to users in a transition period**
- **Compromise option with corrections to the formulas (avoiding jumps) didn't make it into the questionnaire**
- **Continuity is by far the most important aspect for surveyors**

Next Steps

- **Formulate and propose a resolution to the Plenary for Friday**
- **Publish the feedback / answers of the countries on the EUREF web page – if a country disagrees on that, please contact the EUREF secretary**