

# AEGIS – Technical framework: procedures, tools and progress

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# Content

- Introduction
- Key components of AEGIS
- Selection and flagging procedures
- Managing AQUAS elements
- Reflection on progress
- Some open questions

# Introduction

- Thanking organizers for invitation!
  - Complementing presentation of Lorenzo
  - Attempt to provide a **general picture of AEGIS** developments, the achievements and impact
  - Details on all main procedures on **USB stick** and on the **AEGIS website**
  - **An attempt was made to also address 'impact'**
    - however, this is difficult as AEGIS is only 'partly' operational (see also **Background paper**);
    - no '**critical mass**' yet (one cannot be a 'little bit pregnant'!);
    - and thus, difficult to reach/achieve **benefits!**
- ➔ **Instead of 'impact' I will address 'progress'!**

# AEGIS objective (just to repeat!)

To create

**A** **E**uropean **G**enebank **I**ntegrated **S**ystem  
for plant genetic resources for food and  
agriculture, aimed at **conserving the**  
**genetically unique and important**  
**accessions for Europe** and making them  
**available** for breeding and research. Such  
material will be **safely conserved** under  
conditions that **ensure genetic integrity** and  
**viability in the long-term.**

.. and to remember:

# Why do we need AEGIS?

- Big number of genebanks and accessions in > 40 countries
- Collections established with little or no coordination; significant duplication (of germplasm and efforts); limited efficiency
- **ECPGR coordination more at procedural level, very little at implementation level**
- **Huge diversity in approaches, procedures, knowledge etc. → also in quality management**
- Natural/biological factors require collaboration across distribution areas of species to achieve effective conservation!
- ECPGR provides political and administrative framework for collaboration → taking advantage of common legal framework
- **Financial and political stability** for conservation neither (yet) secured within countries nor at regional (European) level

# AEGIS membership status → solid foundation!

<http://www.ecpgr.cgiar.org/aegis/>



*AEGIS Member Countries (April 2014)*

At present:

**34 Members (signed MoUs)**

**66 Associate Members' Agreements**

1. **Albania** (06 May 2009) - Associate Members
2. **Austria** (05 December 2012) - Associate Members
3. **Azerbaijan** (16 July 2009) - Associate Members
4. **Belarus** (02 November 2011) - Associate Members
5. **Belgium** (01 June 2012) - Associate Members
6. **Bosnia and Herzegovina** (19 May 2010)
7. **Bulgaria** (02 December 2009) - Associate Members
8. **Croatia** (02 December 2009) - Associate Members
9. **Cyprus** (15 September 2012) - Associate Members
10. **Czech Republic** (23 July 2009) - Associate Members
11. **Denmark** (22 February 2010) - Associate Members
12. **Estonia** (22 May 2009) - Associate Members
13. **Finland** (02 December 2009) - Associate Members
14. **Georgia** (18 May 2009) - Associate Members
15. **Germany** (05 November 2009) - Associate Members
16. **Hungary** (22 November 2011) - Associate Members
17. **Iceland** (22 October 2010) - Associate Members
18. **Ireland** (22 July 2009)
19. **Italy** (03 March 2014)
20. **Latvia** (01 June 2012)
21. **Lithuania** (12 October 2010)
22. **Montenegro** (16 December 2010)
23. **Netherlands** (28 May 2009) - Associate Members
24. **Norway** (17 August 2009) - Associate Members
25. **Poland** (17 May 2010) - Associate Members
26. **Portugal** (20 November 2009)
27. **Romania** (14 April 2010) - Associate Members
28. **Slovakia** (17 June 2009) - Associate Members
29. **Slovenia** (21 September 2009) - Associate Members
30. **Sweden** (31 May 2011) - Associate Members
31. **Switzerland** (27 July 2009) - Associate Members
32. **Turkey** (14 November 2011) - Associate Members
33. **Ukraine** (30 April 2009)
34. **United Kingdom** (18 June 2010) - Associate Members

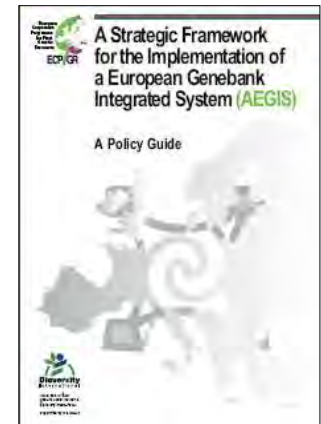
# 66 Associate Members

→ a good start and foundation!

- Albania (2)
- Austria (2)
- Azerbaijan (2)
- Belarus (9)
- Belgium (1)
- Bosnia and Herzegovina (2)
- Bulgaria (1)
- Croatia (2)
- Cyprus (1)
- Czech Republic (9)
- Denmark (1)
- Estonia (2)
- Finland (1)
- Georgia (1)
- Germany (3)
- Hungary (1)
- Iceland (1)
- Italy (2)
- Latvia (3)
- Lithuania (1)
- Netherlands (2)
- Norway (1)
- Poland (1)
- Portugal (1)
- Romania (1)
- Slovakia (1)
- Slovenia (5)
- Sweden (2)
- Switzerland (1)
- Turkey (1)
- UK (3)

# Key components of AEGIS

1. A Strategic Framework for the Implementation of a European Genebank Integrated System  
- A Policy Guide (**Lorenzo**)
2. Formal agreement with countries (MoU) and institutions within countries (Associate Membership) (**Lorenzo**)
3. **European Collection** (unique and important accessions; selection procedures; flagging)
4. **Quality management system** (generic and crop-specific standards; template for operational genebank manuals; safety duplication; distribution; reporting, monitoring and capacity building)





# Key components of AEGIS

## 5. EURISCO as information portal for European Collection



### 35\*. AEGIS Status

(AEGISSTAT)

The coded status of an accession with regard to the European Genebank Integrated System (AEGIS).

Provides the information, whether the accession is conserved for AEGIS.

0 – not part of AEGIS

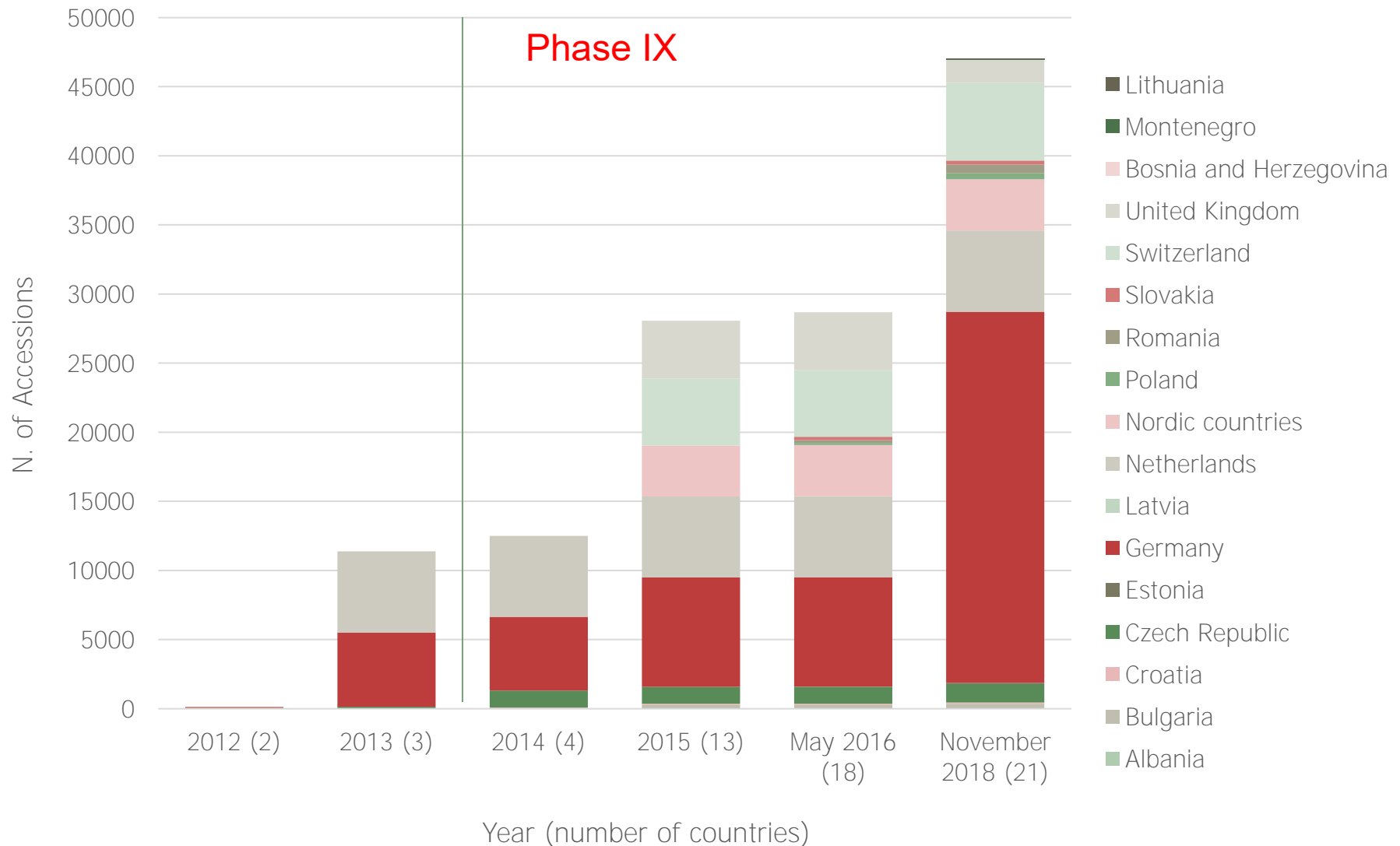
1 – part of AEGIS

If the AEGIS status is unknown, the field stays empty

## 6. Dedicated AEGIS website:

<http://www.ecpgr.cgiar.org/aegis/>

# Growth of European Collection



# European collection – some statistics

European Accessions: **47,049** (23.11.2018)

From **21** countries (incl. 5 Nordic countries)!

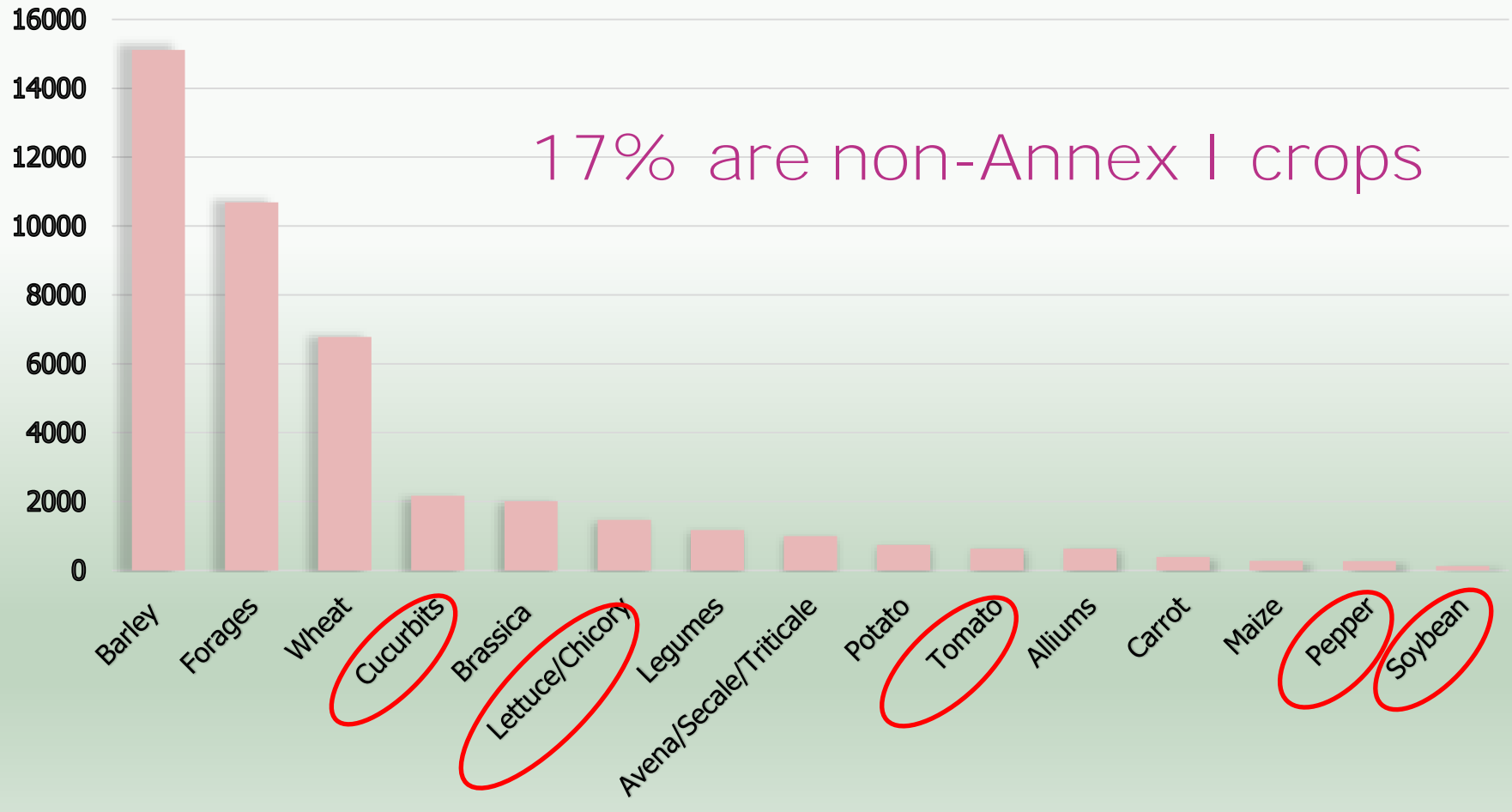
Annex I: **17%** of crops are Non-Annex 1

Biological categories :

- **Landraces:** **37%**
- **Wild, semi natural and weedy:** **27%**
- **Advanced/modern varieties:** **25%**
- **Breeding/research lines, genetic stocks:** **5%**
- **Unknown:** **5%**

→ Total no. accessions low. More details next slides

# European Collection by crops



# European Collection – more statistics

- Associate Member institutions (AMs): 66
  - Contributing to **EURISCO**: 44 (68%) (32% HAVE NOT!?)
  - Contributing accessions to **AEGIS**: 20 (31%) (VERY FEW!?)
- AEGIS AMs (66) hold 646 190 accessions, i.e.:
  - = 50% of total EURISCO accessions (excl. *Arabidopsis*) (??)
  - = 68% of respective National Inventories (POSITIVE!)
- They designated to AEGIS 47 049 accessions
  - = 7 % of accessions the AMs hold
  - = 3.6 % of accession reported in **EURISCO** (excl. *Arabidopsis*)

**→ Room for IMPROVEMENT! Let us use this Workshop to find HOW to achieve this!**

# Selection and flagging procedure of European Accessions (1)

## Brief history

- Identification of **selection requirements** and (crop-specific) **selection criteria**
- **Most Appropriate Accession concept** (MAA); central role of **WGs**; **too cumbersome and complex** →
- **Simplified selection procedure** by asking the **countries** to identify accessions that **originated** (i.e. collected or bred) in their country; expected to be **unique**; **flagging** in AEGIS
- The **‘other’ accessions** would eventually have to be selected according to the more complex procedure

# Selection and flagging procedure of European Accessions (2)

**Current selection procedure (see: *Revised simplified procedure for the selection and flagging of accessions for the European Collection (Final version, 30 December 2013)* :**

1. In order to avoid unnecessary duplication of AEGIS accessions **AMs** are expected to consider **first** as **candidate AEGIS accessions** those that have **originated in the country** (i.e. collected, selected or bred in that country) **or to apply other criteria indicating the uniqueness** of the accessions
2. Originally **collected material by an AM or another institute/ person in another country** and deposited at its genebank is a **second category** of accessions
3. In case the above still results in **unwanted duplicates**, the respective AMs are encouraged to **reach consensus on the most appropriate AEGIS accessions.**

# Selection and flagging procedure of European Accessions (3)

4. **AM** institutes/genebanks propose to their National Coordinator list of **CANDIDATE** accessions they maintain, for inclusion into the European Collection. In addition or alternatively, they may offer **specific services** (e.g. regeneration of material) or expertise
5. **National Coordinator** consider proposal and make the **final decision**, ensuring that the established conservation and availability conditions will be met
6. Approved accessions are **flagged** by National Focal Point, under instruction of NC in corresponding field 'AEGIS status' in **EURISCO** as part of the European Collection



# Selection and flagging procedure of European Accessions (4)

7. European Accessions flagged in EURISCO are expected to be only **un-flagged in specific cases**, including:
  - the **death** of a given accession;
  - an agreement between two or more countries on the **most appropriate accession among duplicates**;
  - the occurrence of **a force majeure situation**.

**THIS UN-FLAGGING OPTION IS USED! DYNAMIC!**
8. EURISCO will allow changes in the composition of the European Collection; **being tracked (EURISCO audit!)**  
**→ FURTHER DISCUSSIONS IN RESPECTIVE DISCUSSION GROUP!**

# Selection and flagging procedure of European Accessions (5) - issues

1. Working Groups recommend lists of accessions and these are not easily implemented /followed up??
2. Just to flag, **13 AEGIS member countries** did **not** include accessions: Austria, Azerbaijan, Belarus, Belgium, Cyprus, Georgia, Hungary, Ireland, Italy, Portugal, Slovenia, Turkey and Ukraine. **Possible reasons?**
3. **Do we have a target number of accessions?** E.g. if 'only' **35%** of EURISCO → **455 000** (now 47 000)
4. European Collection is growing slowly. **What are possible reasons for this?**
  - a. **Funds** for germination tests & regeneration?
  - b. Lack of **coordination**?
  - c. **Low priority** at national level?
  - d. Other?

# Managing European Collection: AQUAS elements (1)

## 1) Operational genebank manual

- *All Associate member institutes are expected to complete (within 12 months upon signature) and upload their manual onto AEGIS website*
- **Detailed template** for all conservation activities available
- **8** genebank manuals from **5** countries online (**12%**); some in progress
- **Secretariat** available to assist/comment
- **Progress slow; requires more effort; beneficial to genebank and staff; essential element of AQUAS**

# Managing European Collection: AQUAS elements (2)

## 2) Generic operational genebank standards

- Generic standards for **seed, field and *in vitro*/cryopreservation** genebanks approved by FAO Commission in April 2013
- **Accepted by SC** as basis for AEGIS operations
- **To be adopted** by Associate Members
- **Deviations** allowed, when adequately argued; number of **WGs have done this (see docs on USB stick!)**
- 3 areas recognized in AQUAS doc., i.e. **safety duplication; distribution; information management**
  - **Latter 'complete' (adequate? sufficient?)**

# Managing European Collection: AQUAS elements (3)

## 3) **Agreed minimum crop-specific technical standards** (complementing the generic standards)

Routine genebank operations that might require

**crop-specific** standards:

- Collecting / Acquisition
- Regeneration / Propagation
- Drying and other preparatory steps
- Storage / field genebank / *in vitro* – cryo maintenance
- Seed quality and viability monitoring
- Distribution
- Characterization and evaluation

# Managing European Collection: AQUAS elements (4)

- To be developed by **all crop WGs** (see USB stick!)
  - Secretariat provided a **template**, loaded with **general standards** for agreement and/or crop-specific items to be developed; frequent interactions with WGs
  - **9 WGs (50%)** have agreed on crop-specific standards for one or more routine operations (using FAO standards as a reference)
- **Lengthy process; agreement needed from WG members; no comments on applications!?**

# Managing European Collection: AQUAS elements (5)

## 4) AEGIS Safety-duplication Policy

- Policy: “A safety-duplicate of **each European Accession** will be stored at **one or more** collaborating and **agreed European genebank(s)** or institution(s) **and/or at the Svalbard Seed Vault**”.
- Agreement established with Norwegian government on Svalbard to be acceptable as ‘**primary duplication side**’ for AEGIS (!!)
- **AEGIS Safety-Duplication** (non-mandatory) **model Agreements** developed (**are online**)
- **Monitoring on implementation through EURISCO (63% acc. are!)**
- **No feedback on problems (except one country for selecting genebank for duplication)**

→ **Further discussions** possible in Discussion Group on AQUAS

# Managing European Collection: AQUAS elements (6)

## 5) AEGIS Distribution Guideline

- Numerous **reasons to standardize** this procedure
  - The **objective** is to harmonize the procedures and practices among the AEGIS Associate Members with respect to the routine distribution of European Accessions
  - Germplasm requests should include **a clear purpose**
  - In principle only '**small requests**'; otherwise **justification**
  - Distribution under an **SMTA**
  - Encouragement to **request feedback** on material
  - **Phytosanitary Certificate** or a comparable document will be arranged by the Provider if requested by the Recipient and if feasible
  - AEGIS accessions distributed with **passport data or URL**
- **No monitoring needed, these are 'only' guidelines (!?)**



# Managing European Collection: AQUAS elements (7)

## 6) Record keeping, monitoring and reporting system

- **Quality assurance** is based on principle that you:
  - a) Plan - say what you do
  - b) Do - do what you say
  - c) **Check - let an independent body check that you do what you say**
  - d) Act - Correct and improve what you say you do
- To achieve this **we need to implement** a recording, reporting and monitoring system!
- **A policy document has been prepared**, endorsed by SC but NOT (yet) implemented as:
  1. **AEGIS was/is still not really operational;**
  2. **the European Collection is still 'incomplete';**
  3. **alternative proposals made; and**
  4. **Secretariat felt this to be too demanding/scary.**

# Managing European Collection: AQUAS elements (8): **issues**

- Implementation of AQUAS & Monitoring system requires: **commitment; consensus; capacity building. How to achieve this?**

# Reflection on achievements/impact

- Where appropriate, comments have been made on **individual aspects** of main procedures above
- At large, it will not be possible to meaningfully assess **impact** yet as for most activities we have not reached a **significant level** or **critical mass**
- This situation is a **serious constraint** for the further development of AEGIS. I hope this Workshop will help in **overcoming this hurdle!**
- Therefore, let us continue to ‘fight’ for a strong(er) AEGIS, it is a **long-term ideal!!**

# Some 'final' remarks

1. **Trust** is a key pre-requisite to build AEGIS.
  - a. How can we further build or strengthen this?
2. We are engaging in something that matters now and for the future → **we have to get it right!**
  - a. Do we need more open and frank communication?
  - b. Should we for instance consider to provide feedback to each other?
3. Something that needs to happen is that the **strong ones help the weaker ones:**
  - a. Do we consider 'mutual' capacity building enough?
  - b. Do we offer each other 'services' in areas of strength?

# Some 'final' remarks

- **Is AEGIS making an impact?** Visibility, Use → indicators in revised objectives of Phase X
- Unsuccessful experience with **Horizon 2020**. European Commission will not support AEGIS outside of competitive projects, unless member countries **lobby at high level** (Council of Ministers). **More effort needed?**
- **Do you expect more help/advice from Secretariat?**

Sorry for this long presentation!

**Thank you for your  
attention!!**