



THE HAGUE
**INTERNATIONAL
SPACE RESOURCES**
GOVERNANCE WORKING GROUP

Dr. Giuseppe Reibaldi
Executive Secretary



UNIVERSIDADE
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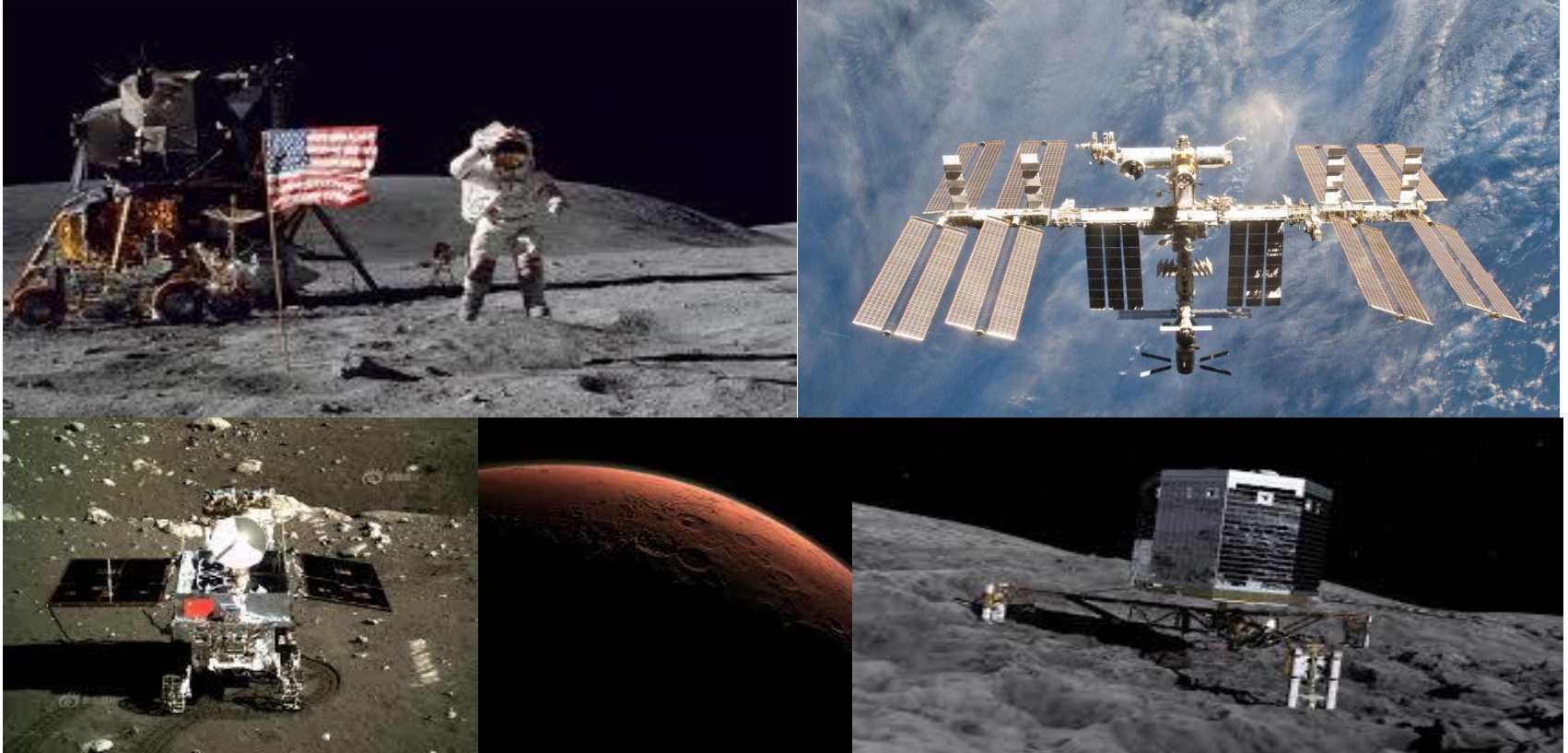
OUTLINE

Introduction - G.Reibaldi, Executive Secretary

Draft Building Blocks – O.Bittencourt, Vice-Chair

Industry Prospective- K.Acierno, Technical Panel Chair

Present Space Exploration



- Driven mainly by political and scientific incentives
- Governments have been the exclusive providers of finance

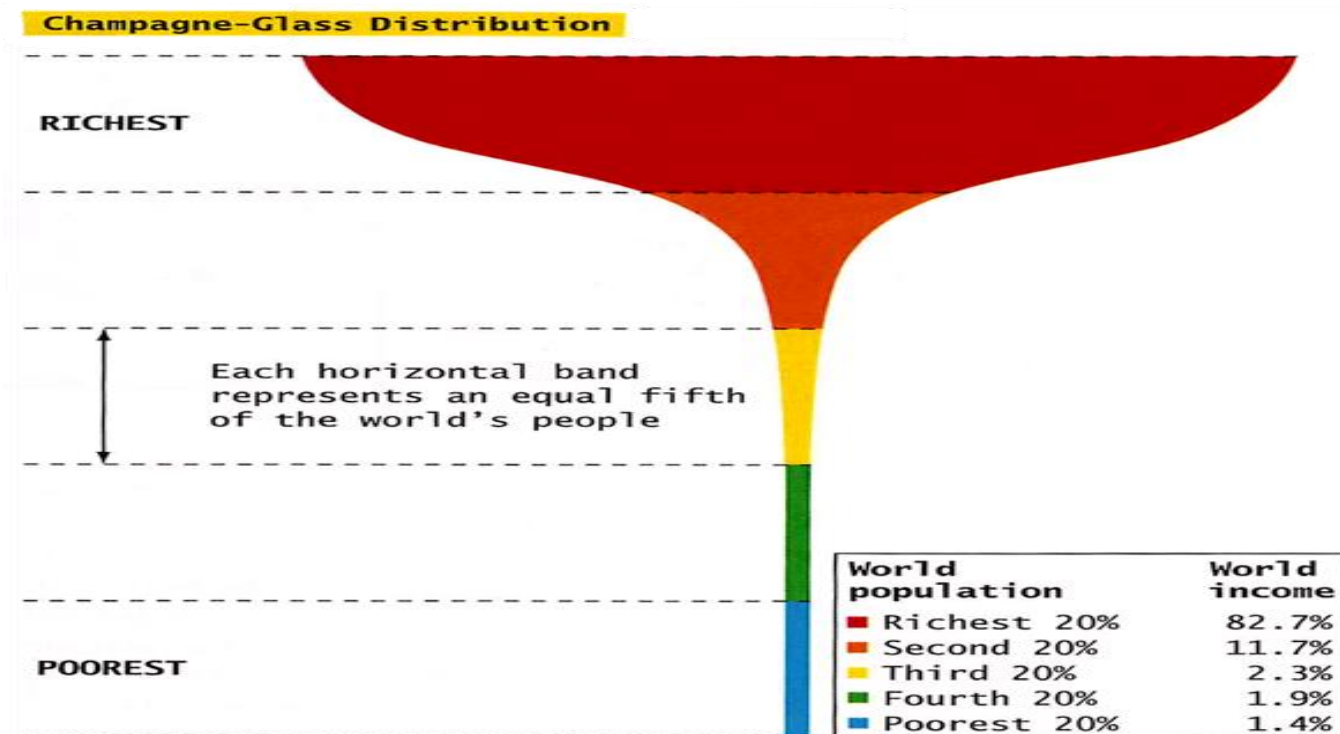
Future Space Exploration

- Space Exploration requires the generation of revenues, in order to be sustainable and to open new markets
- Space Resources utilization is the answer
- Several commercial initiatives have started for:
 - Asteroids: Planetary Resources, Deep Space Industries, Asteroid Mining Corp, etc..
 - Moon: Lunar Xprize with Teamindus, Hakuto, Moon Express, SpaceIL, Synergy Moon, Astrorobotics, etc...



The impact of Space Resources

- SR stimulate development of technologies; capital from developed countries; human resources; engineering; management from developing countries
- SR could contribute to the creation and redistribution of wealth in the world

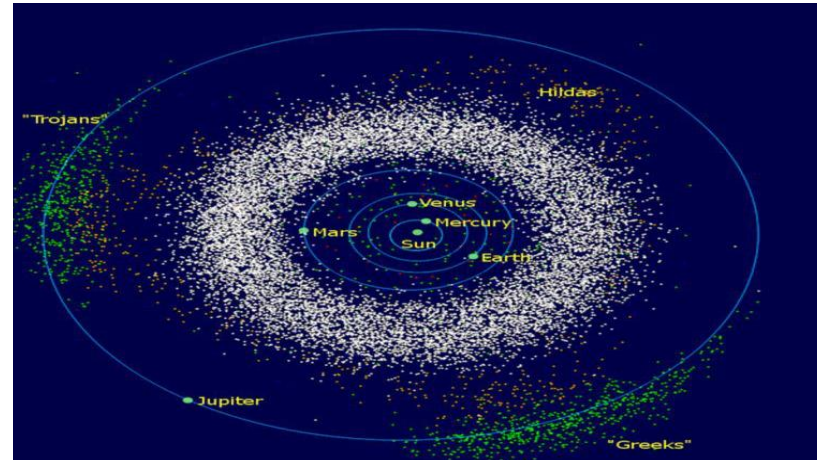


Space Resources Feature

➤ How many Space Mineral Resources are available?

➤ How many asteroids are there?

Millions...



➤ What is the surface of the Moon?

38 Million Km²

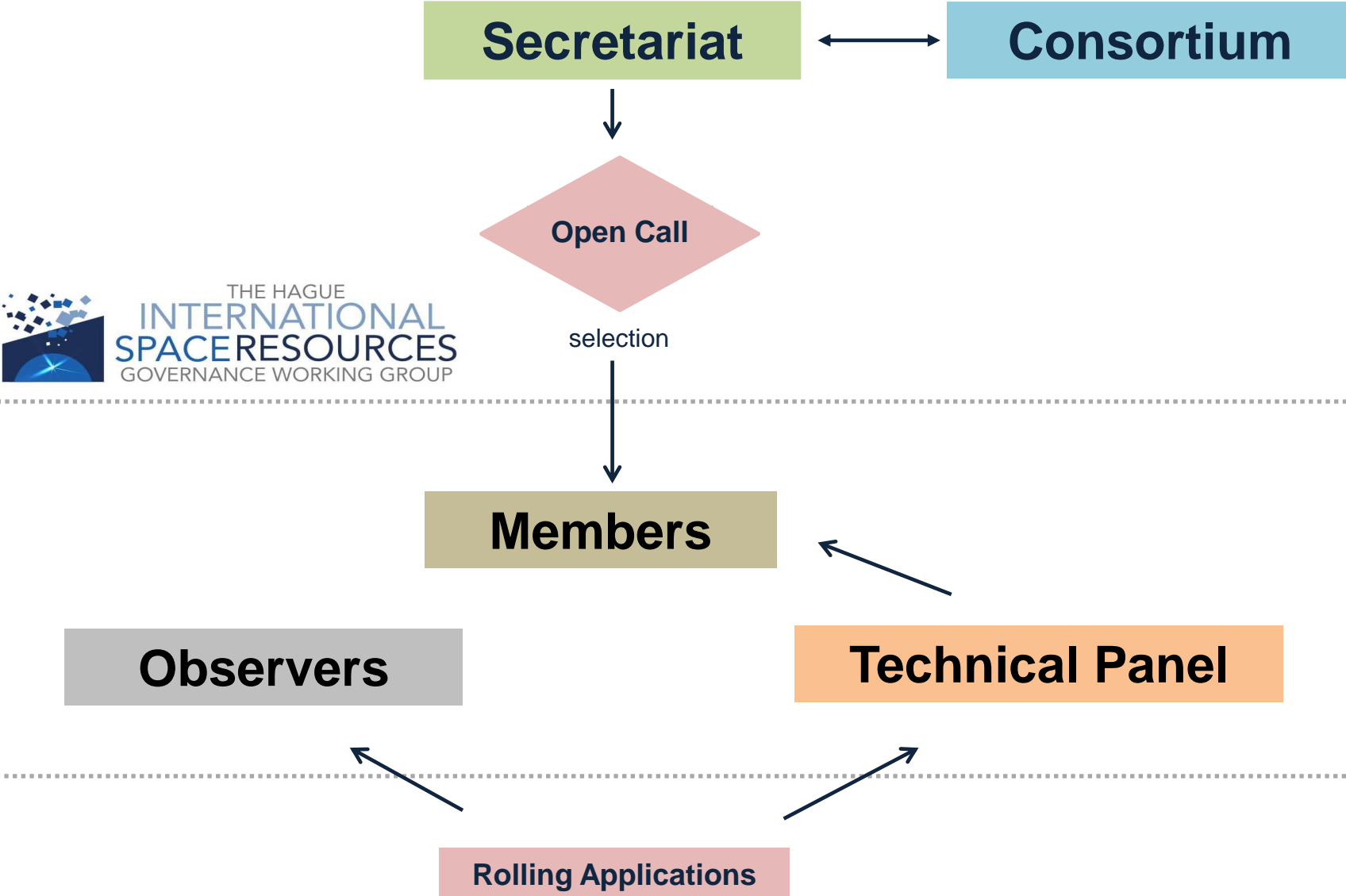
4 times US surface



Space Resources: Major Legal Issues

- Right to own any extracted resources
 - Priority Rights to mining claims
 - Non-interference in mining operations
 - Regulatory clarity without excessive regulation
 - Benefits sharing
-
- The Working Group was created in 2015 with the goal to clarify these issues by providing an unofficial multi-stakeholders forum to prepare the ground for a possible international framework
 - Phase 1 completed in December 2017
 - Phase 2 will be completed by December 2019

Operation of the Working Group



Consortium

The WG is hosted by a Consortium of organizations located in all continents:



International Institute of Air and Space
Law (Leiden University, The
Netherlands)



Secure World Foundation (USA)

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Nishimura Institute for Advanced
Legal Studies (Japan)



University of Luxembourg
(Luxembourg)



University of Cape Town (South Africa)



Catholic University of Santos (Brazil)



Centre for Resources, Energy and
Environmental Law (University of
Melbourne, Australia)



Indonesian Centre for Air and Space Law
(Padjajaran University, Indonesia)

Ten to the Ninth Plus
Foundation (USA)

Phase 2 features:

- The Members decided to extend the WG activities for two more years, during the period 2018-2019, with the purpose to:
 - Broaden the prospective of the WG by increasing the membership to 35 via an open call
 - Increase the outreach activities on the results achieved, preparing the ground for the development of an international agreement or non-legally binding instrument for the governance of space resources activities
 - Consolidate the Draft Building Blocks
 - Act as a complete platform to exchange information among stakeholders on progress and issues related to the use of space resources,
- **A Technical panel has been set-up to advise the WG**
- **An open call for membership of phase 2 has been issued on 1 December 2017 until 15 January 2018**

Outreach

- The Working Group operates in a transparent and inclusive way and everybody interested can be involved
- Public events to explain the status of its activities and its findings are being held around the world
- **Website:** <https://www.universiteitleiden.nl/en/law/institute-of-public-law/institute-for-air-space-law/the-hague-space-resources-governance-working-group>
- WG present on Twitter and Facebook

Specific information can be requested to:

Dimitra Stefoudi, Assistant Secretary: spaceresources@law.leidenuniv.nl

Invitation to submit comments on the Draft Building Blocks

The preliminary result of the work of The Hague Space Resources Governance Working Group can be found at:

<http://law.leiden.edu/organisation/publiclaw/iasl/working-group/the-hague-space-resources-governance-working-group.html>.

The Working Group invites any interested organisation or individual to submit comments and remarks on the text of the Building Blocks by **1 July 2018** to spaceresources@law.leidenuniv.nl or by filling in the questionnaire available on the [website](#)

Questions?



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Terms of Reference

- Assess the need for a framework for space resource activities related to the use of mineral and volatile materials on the Moon and other Celestial Bodies
- In case of need, to lay the groundwork for the definition of such a framework based on the UN Treaties on outer space
- The groundwork required will include the identification and formulation of building blocks for the governance of space resources with possible implementation of a relevant forum for the negotiations
- Following its conclusions the Working Group would like to encourage States to start negotiating an international framework

Management

- Secretariat (Executive Secretary and Assistant Secretary) embedded in the International Institute of Air and Space Law, Leiden
- Chair, Vice Chairs, Members, Observers

Members

- Important stakeholders from government, industry, academia, research centres, space agencies, international organisations
- The expected members are 35, however the confirmed members are 28 with the following nationalities: Brazil, Australia, Indonesia, Czech Republic, South Africa, The Netherlands, Japan, Italy, India, Ireland, Nigeria, UK, USA, Switzerland, India, France, Mexico, China, Luxembourg
- 7 positions are still available

Observers

- Numbers not limited, confirmed at the moment close to 50
- UNOOSA is included

Technical Panel

- Members are industrial stakeholders, universities, space agencies
- Goal: Identify and discuss technical challenges related to SR, advise the WG about current developments and the feasibility of implementing the building blocks



High Value Asteroid Materials

ASTEROID ELEMENTAL ABUNDANCE RELATIVE TO EARTH'S CRUST



VOLATILES AND H₂O
to fuel the growth of
humanity into new frontiers



INDUSTRIAL METALS
to construct and
sustainably service space
platforms



PLATINUM GROUP METALS
to support demand growth on
Earth

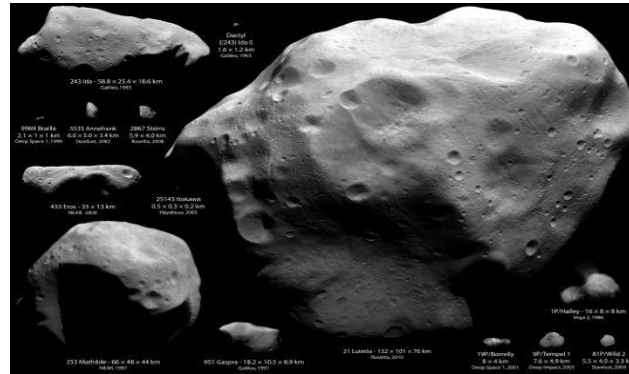


Despite desire to reduce dependency,
one-in-four manufactured goods require PGMs.



Key Question

- Is it Technically Feasible to use SMR ? Yes
 - Several Asteroids visited since 1991 by US, Japan, Europe:



- New Missions are planned:
 - to retrieve materials from Japan and US;
 - to survey them by Private Companies,
 - to Redirect them by US
- Technologies to find and exploit resources exists and some are being patented but require development

Key Question

Do we have an agreed international legal status of Space Resources utilization with an associated governance ? **No**

- Outer Space Treaty of 1967, ratified by more than 100 countries, does contain reference to Outer Space and Moon Exploration and Use, but it has ambiguities related to the use of Space Resources
- Several interpretations from OST have been derived, but not internationally agreed
- Moon Agreement of 1979, ratified by 16 countries
- National Legislation have been enacted by US and Luxemburg

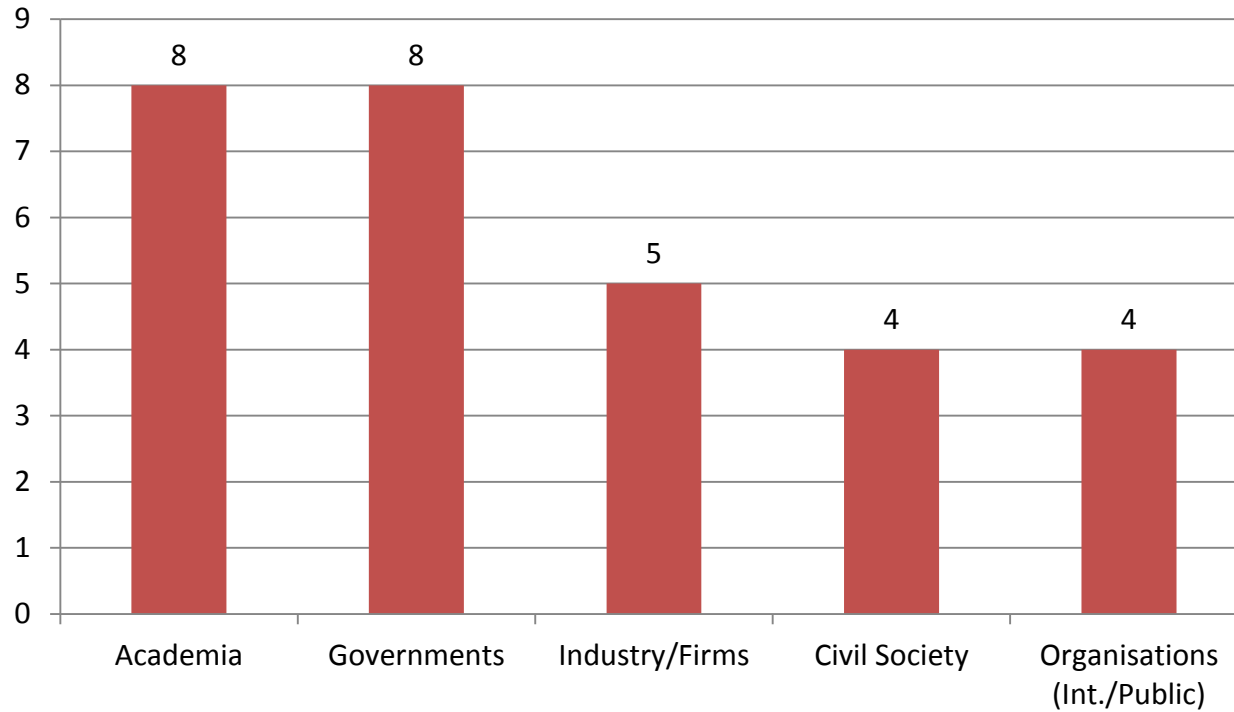
Membership statistics

Members: 29

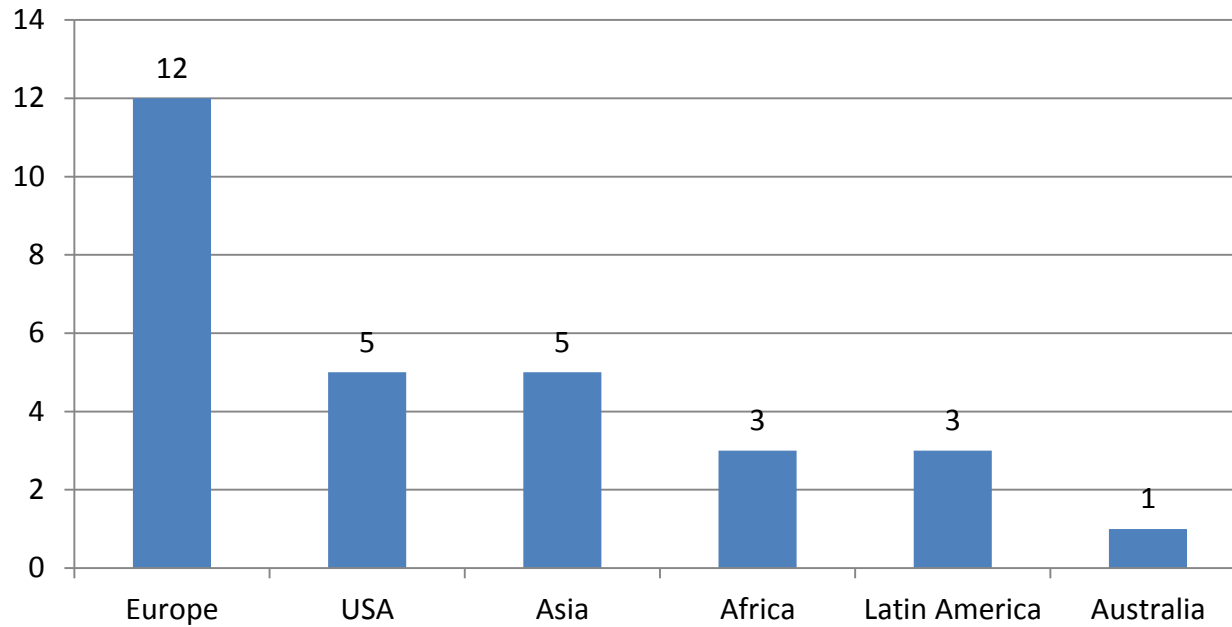
Consortium Partners (de facto Members): 9

- 15 out of the 17 Members (excl. Consortium Partners) of the 1st phase applied for the 2nd phase
- 11 out of the 29 members are new participants
- 4 out of the 29 members represent developing countries

Entity Representation



Geographical Representation



Country Representation

