The Financing of International Polar Research
Towards enhanced funding agency coordination frameworks in the Post-IPY Environment

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Executive Summary:

International Polar Research requires a scale of funding and critical mass that necessarily has to be addressed through intergovernmental cooperation beyond the level of individual countries. The creation of the International Polar Year has in general generated strategic investments and injection of funding additional to normal national activities. The step change in the intensity and visibility of the Polar Regions to National Governments is primarily due to the political drivers to addressing Climate Change and the socio-economic impacts. In the Post-IPY Environment it is critical to sustain and maintain the new-horizon of funding and to avoid a post-IPY depression. The maintenance of this new Horizon is justifiable providing continuity to new research questions identified by this concentrated observational period. Estimates of the total global IPY investment have been placed in excess of 1 billion$* in direct or indirect activity, although accurate attributions are difficult to the variable sources of funding and the complexity/diversity of national funding systems. In a operating environment European nations invest annually approximately 500 Million Euros each year in Polar Research (cf. European Polar Consortium Surveys of 19 Countries RTD Programmes and infrastructures). The United States has comparable annual funding for Arctic and Arctic activities across the agencies involved. Estimates of normal annual Global spend on Polar research exceeds 1.5 Billion$ per annum.

The provenance of IPY funding and the allocation in terms of direct financial support or support to infrastructures needs to be assessed to enable conclusions regarding the global investment in this event. It is clear that insufficient mechanisms exist in the current landscape to facilitate exchange of funding information and connected planning/priority setting by Funding agencies investing in the polar Domain. One consideration could be the establishment of an ‘International Polar Funding Framework’ for considering and discussing future International strategic investments in Polar Research by the national and supranational actors involved. This platform would allow funding agencies and the investors in Polar research to identify mutual priorities and build strategic financial partnerships to support large-scale research efforts at the International Scale. The future challenges of financing comprehensive assessment of climate in the Polar Regions and the impact upon, the concrete implementation of research programmes arising from science planning processes such as ICARP II, ACIA, and sustained Arctic/Antarctic observational systems (SAON).

The subject of international polar funding coordination is especially relevant where a critical threshold is exceeded Eg; the magnitude of the programme and the infrastructure required to implement the programme is so large that it requires international agreement on funding or a large scale Consortium Eg; Deep Ice Coring Science.
The Earth Observation community through the GEO process (Group on Earth Observations) has established a well functioning and political relevant structure. This is a model that we could consider for facilitating the governmental funding stakeholders to interact on setting longer term connected planning and prioritisation of research and infrastructural investments. It is apparent that a framework for handling international Polar Funding would enhance the efficiency, introduce realism into the system and require a prioritisation of large-scale research efforts in the Polar Regions for the next few decades.

**Major Post IPY Funding Challenges:**

Significant challenges are facing the International Polar Research community in the Post-IPY Environment. The IPY will raise the level of visibility and expectations of the public to be more fully engaged in understanding the importance of the Polar Regions. It is therefore necessary for the normally ‘funding horizon’ to be on a higher starting level to respond to these expectations. The concerted and intensive observational period that the IPY represents will result in significant new data and interpretations that will require investment capacity to maintain and the outreach and communications activities.

**Existing mechanisms of National/Regional/Trans-national/Supranational funding:**

A limited number of sources of core funding for International Polar Research can be identified which have the following provenance:

- **National-** (national Agencies and authorities supporting competitive or thematic/strategic programmes in the Polar Regions.
- **Regional** (regional groupings such as the Nordic council of ministers or areas of special interest)
- **Supranational** (EU Framework programme and European research Council)
- **International-Intergovernmental** (United Nations Organisations etc).

**Priority Setting between funding agencies:**

The multi-year strategic/financial plans of the various funding agencies should be compared and common themes identified. Strategic investments
**Political drivers to strategic investment and injection**

Event or issue based investments (Eg; Tsunami, dramatic events) responding to political pressure. This funding is unpredictable and generally time-limited to an initial high injection phase and several smaller. The funding is very much controlled and regulated according to the political environment and public opinion.

**Coordination of Funding Agencies at the International Level:**

The international polar funding community is at an early stage in addressing how their component agencies can agree on more harmonised systems of interaction. The complexity of the European funding system (cf. European Polar Consortium Assessment report of RTD programmes 2006) is a testament to the diversity of the funding sources and the national decision making process that is required to allocate resources on a thematic and non-thematic basis. The concept of an 'International Polar Funding Framework' composed of stakeholder funding agencies/Ministries would aid large Polar scientific coordination bodies such as SCAR, EPB and IASC to work together to prioritise the initiatives and the degree of funding required to implement programmes of a trans-national nature. The European Polar Consortium (EUROPOLAR ERA-NET) is currently planning the administrative, scientific and management protocols for launching a trans-national funding programme (A European Polar Framework Programme) to funding calls covering scientific issues of Polar Climate Science, Ecosystems in Extreme environments and Frontier areas of Polar research Genomics/. This is a regional approach but it could be scaled up to the international level by the addition of key funding agencies from outside Europe and

Mechanism and structural responses to address enhanced funding coordination:

- **Determine the overall complexity of the funding systems for Polar research at the International level.**
- **Identification of global allocations for IPY and requirements for Post-IPY Operating environment**
- **Assess legal or political barriers to International trans-national funding cooperation.**
- **Generate mechanisms for funding prioritisation of international Polar programmes which require multi-national support.**
Conclusions:

Funding concepts/frameworks for supporting International polar research efforts in the post-IPY environment are required to ensure adequate momentum and implementation of recommendations of the major science planning processes such as ICARP II, ACIA etc. Funding agencies need to engage in greater connection and discussion on strategic priorities and shared research goals over multi-year cycles to ensure that there is adequate and continuing support to post-IPY initiatives. An efficient mechanism for dialogue between national operators, funding agencies on the prioritisation of international polar research programmes need to be considered to avoid an overload of requests and duplication of efforts.