

## Sustainable infrastructure: towards ENES-RI

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& the Sustainability WG

0 - WHAT: the ENES research infrastructure

1 - WHY: Context

2 - HOW: what has been done so far

3 - FORWARD: what is left to be done?

4 - Summary

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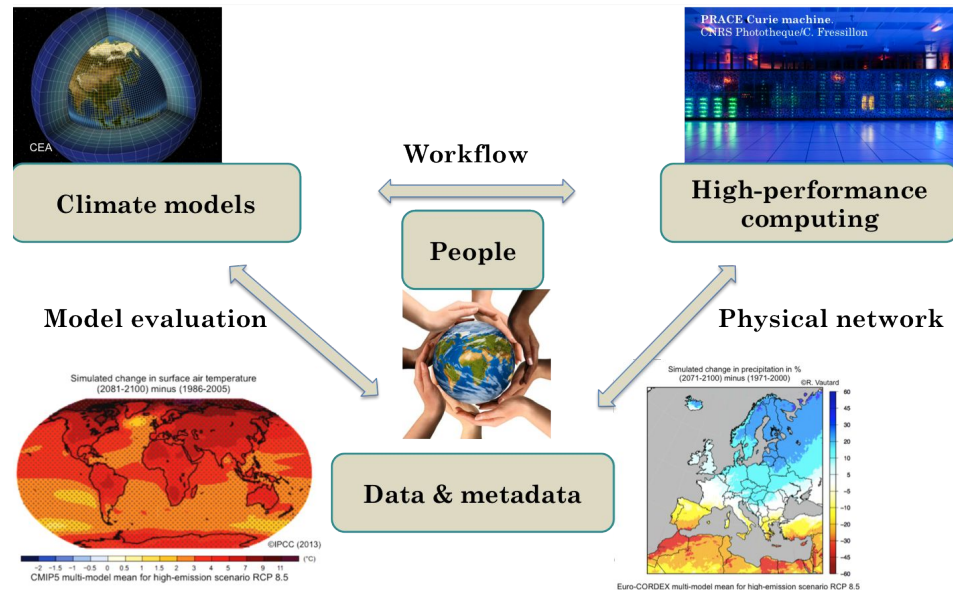
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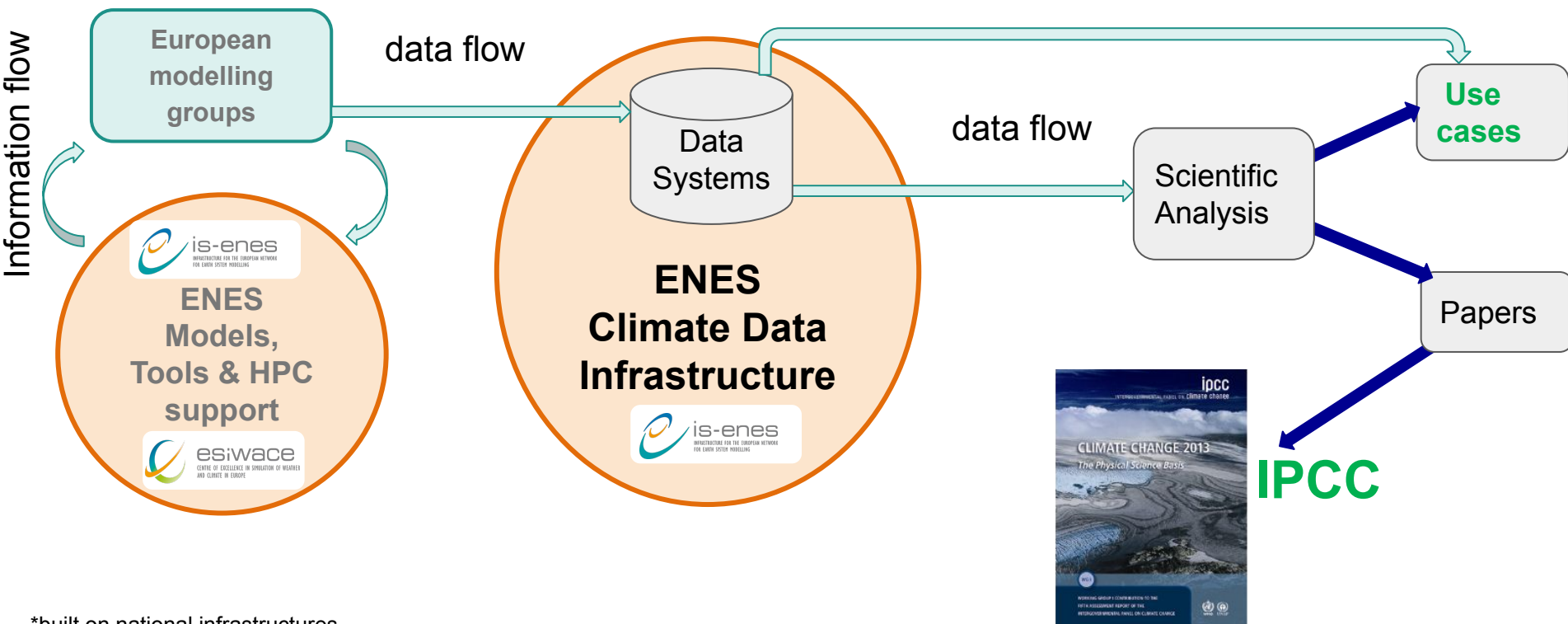
## Primary focus: the climate modelling research community

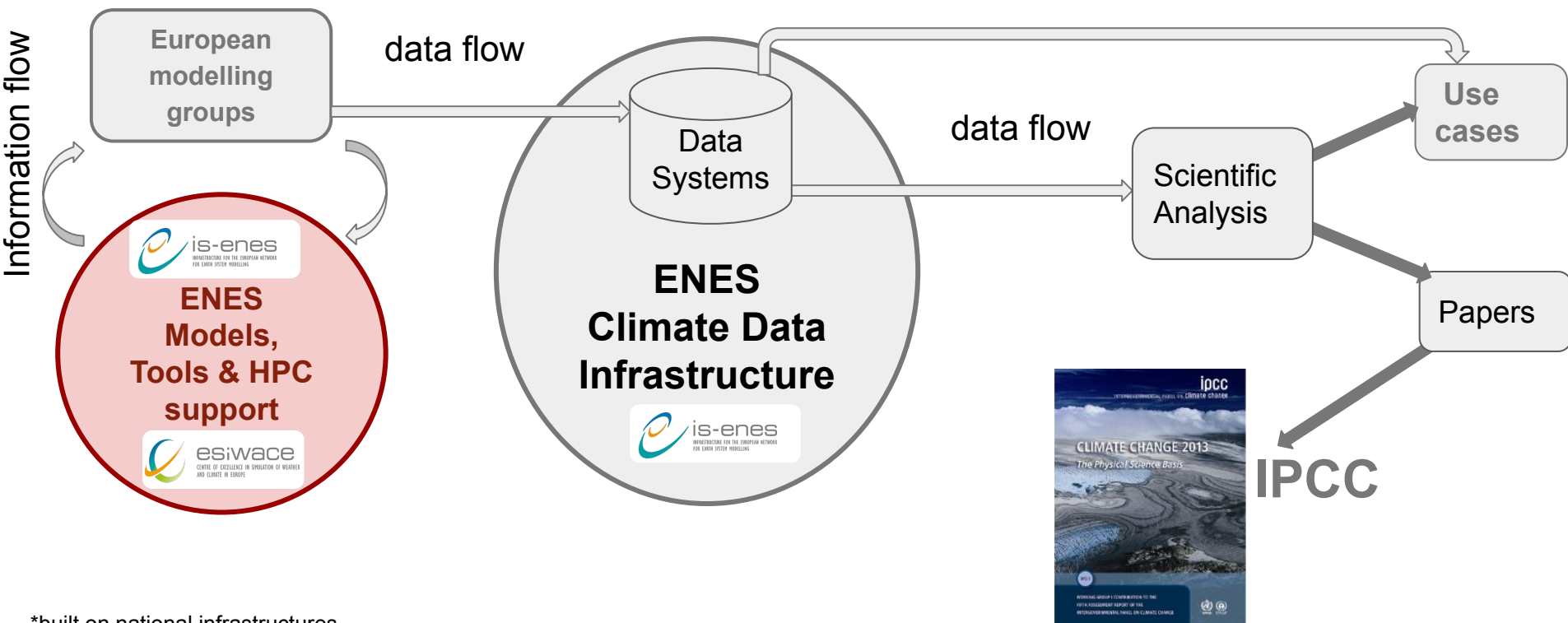
- Foster common model development and efficient use of HPC.
- Sharing of expertise, training
- Support exploitation of model data
- Support **WCRP** coordinated experiments (**CMIP** & **CORDEX**)
- Prepare for exascale

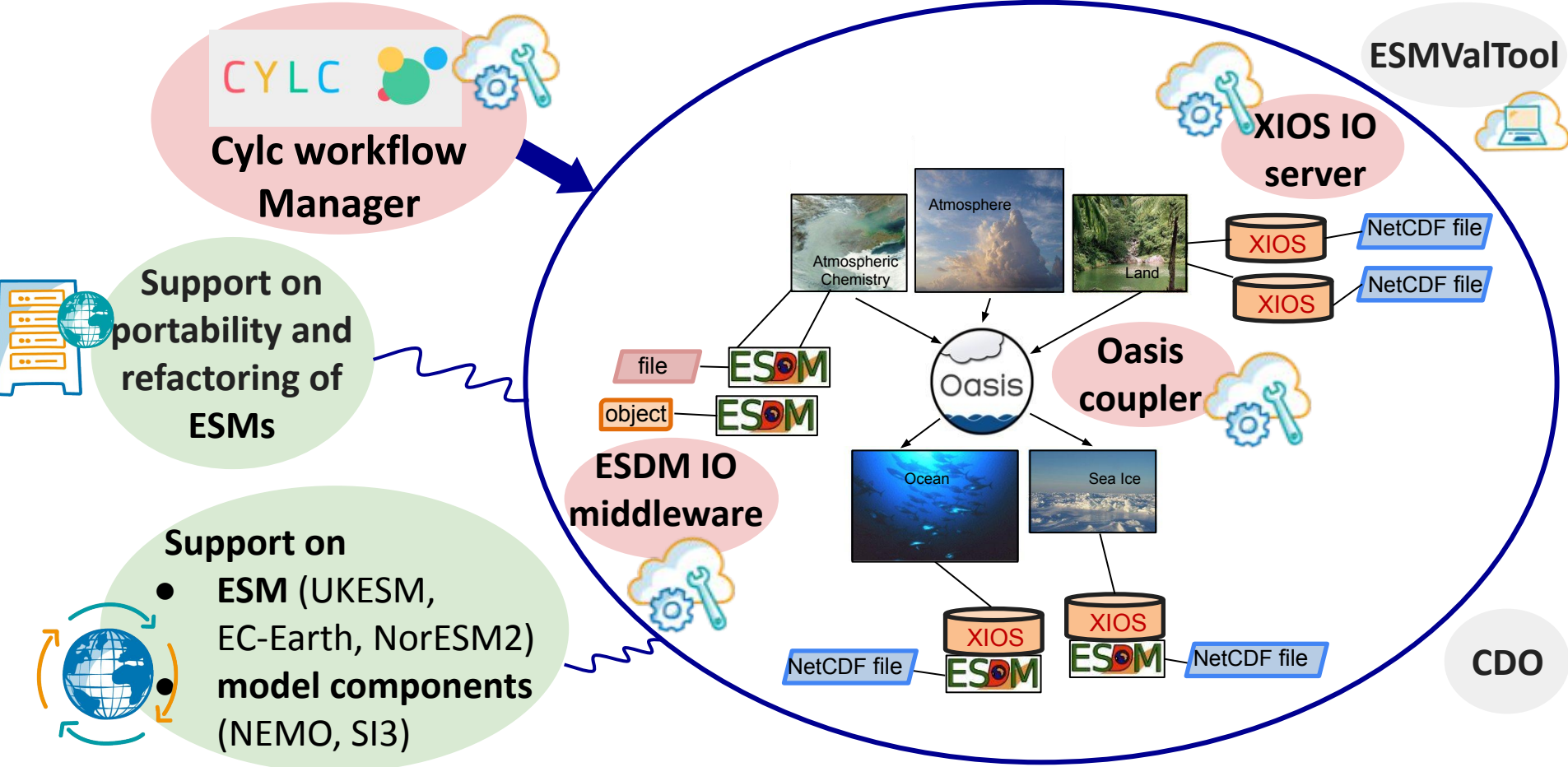


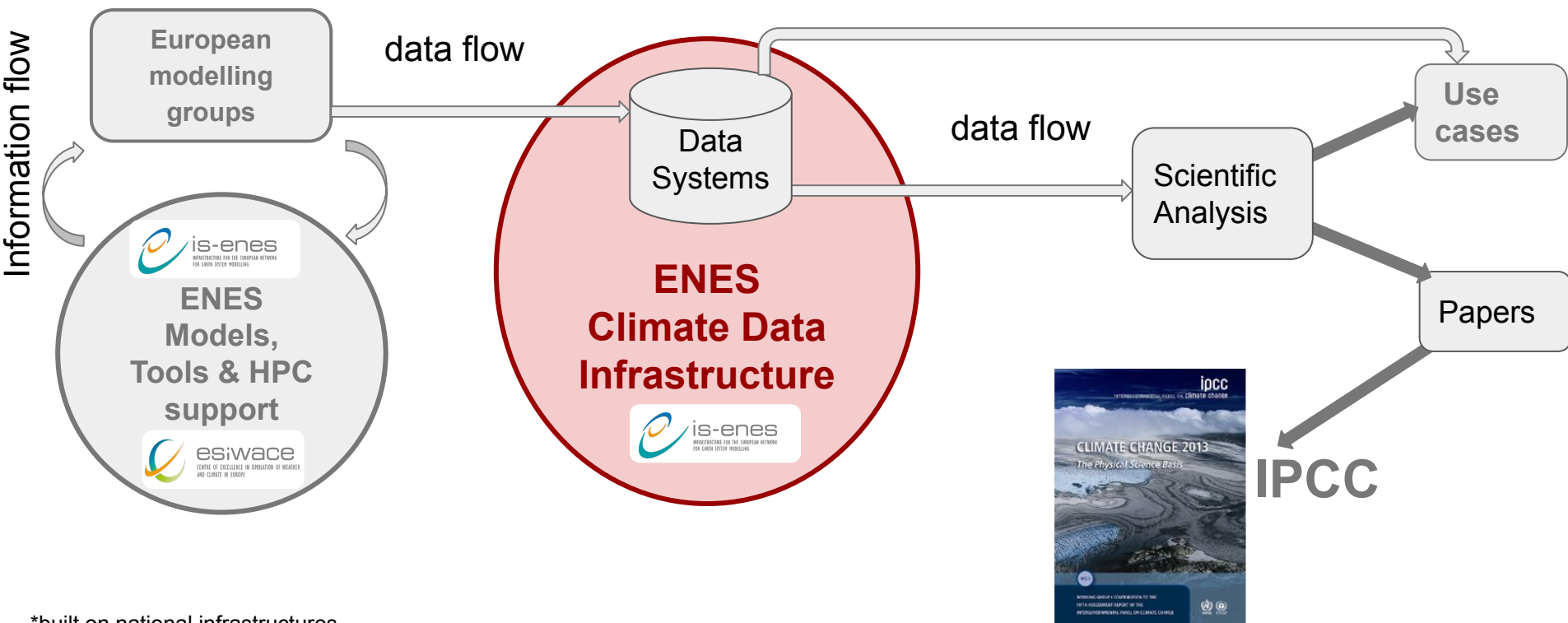
### Two EC project streams:

- **IS-ENESx**: Infrastructure for the European Network for Earth System Modelling (since 2009).
- **ESiWACEx**: Centre of Excellence in Simulation of Weather and Climate in Europe (since 2015).



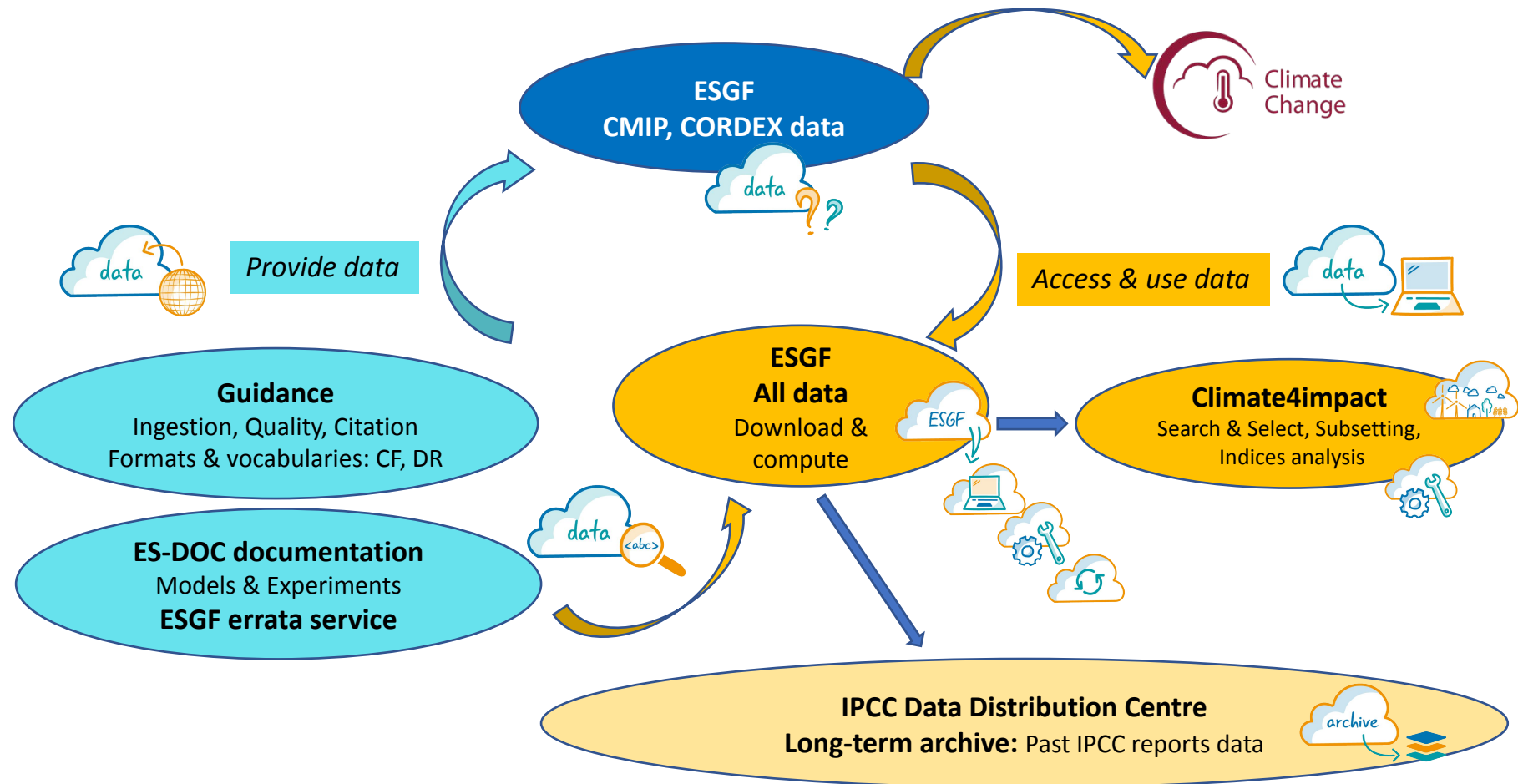








# ENES Climate Data Infrastructure (CDI)



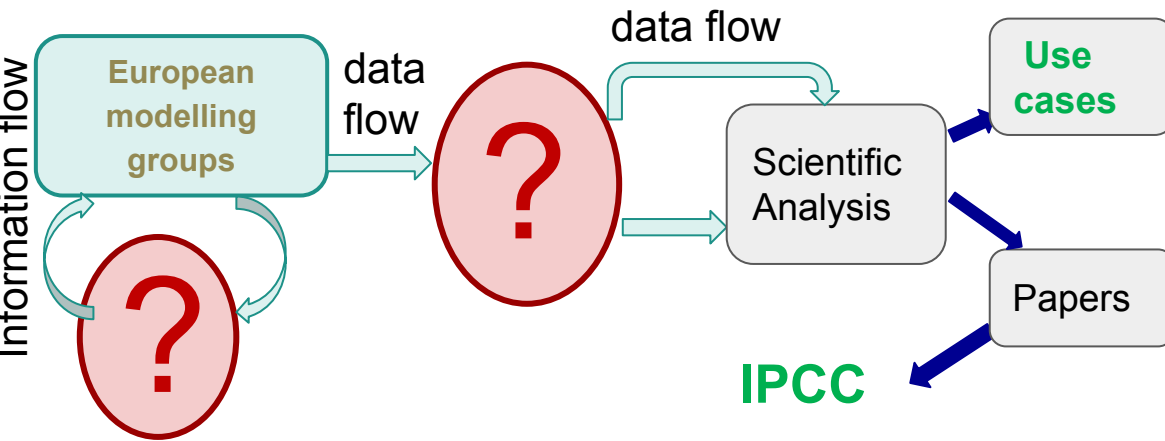
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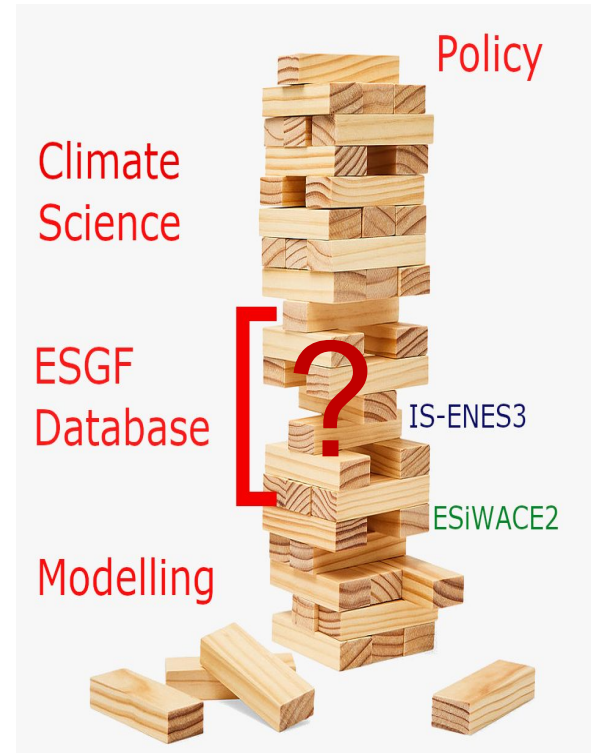
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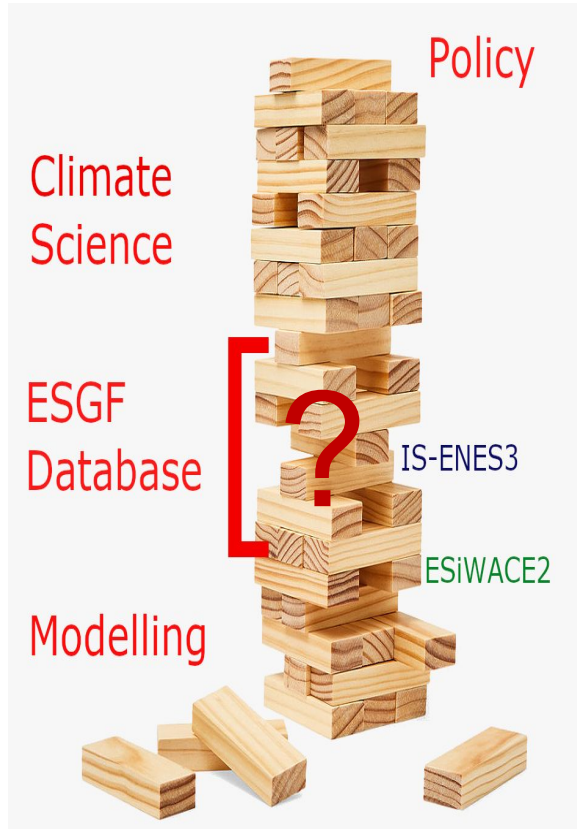
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The ENES-RI provides essential infrastructure which underpins the production of synthesized research informing climate policy.

The ENES-RI currently largely relies on EU funding from both IS-ENES3 and ESIWACE2 projects.





**EU funding is ending now.**

**=> Underfunding of RI will slow down science outcomes and prejudice adequate policy advice.**

**We are working toward sustaining our ENES-RI.**



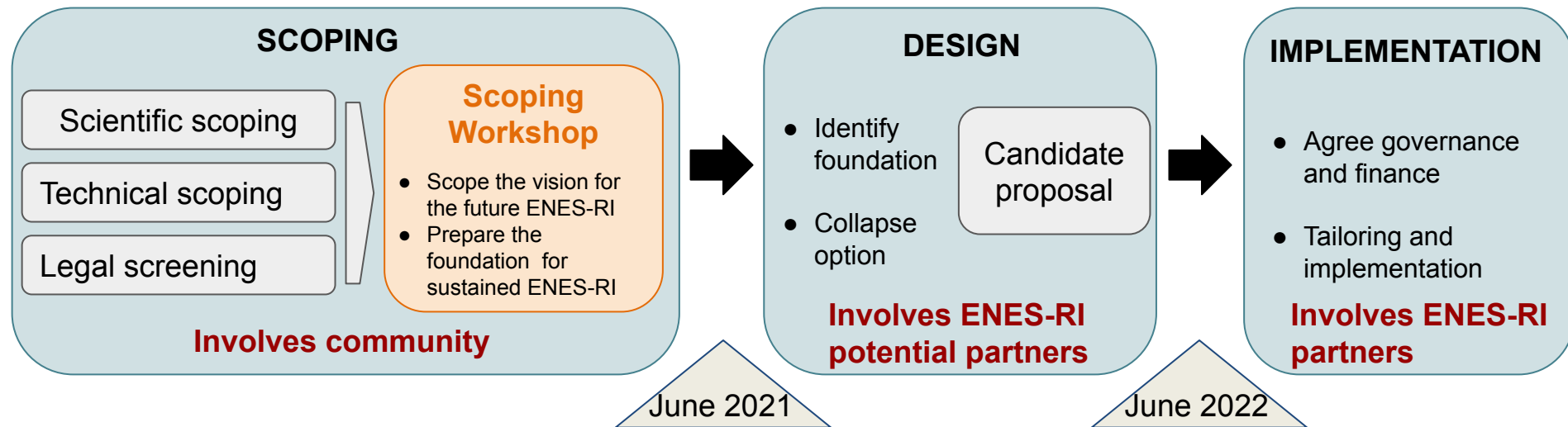
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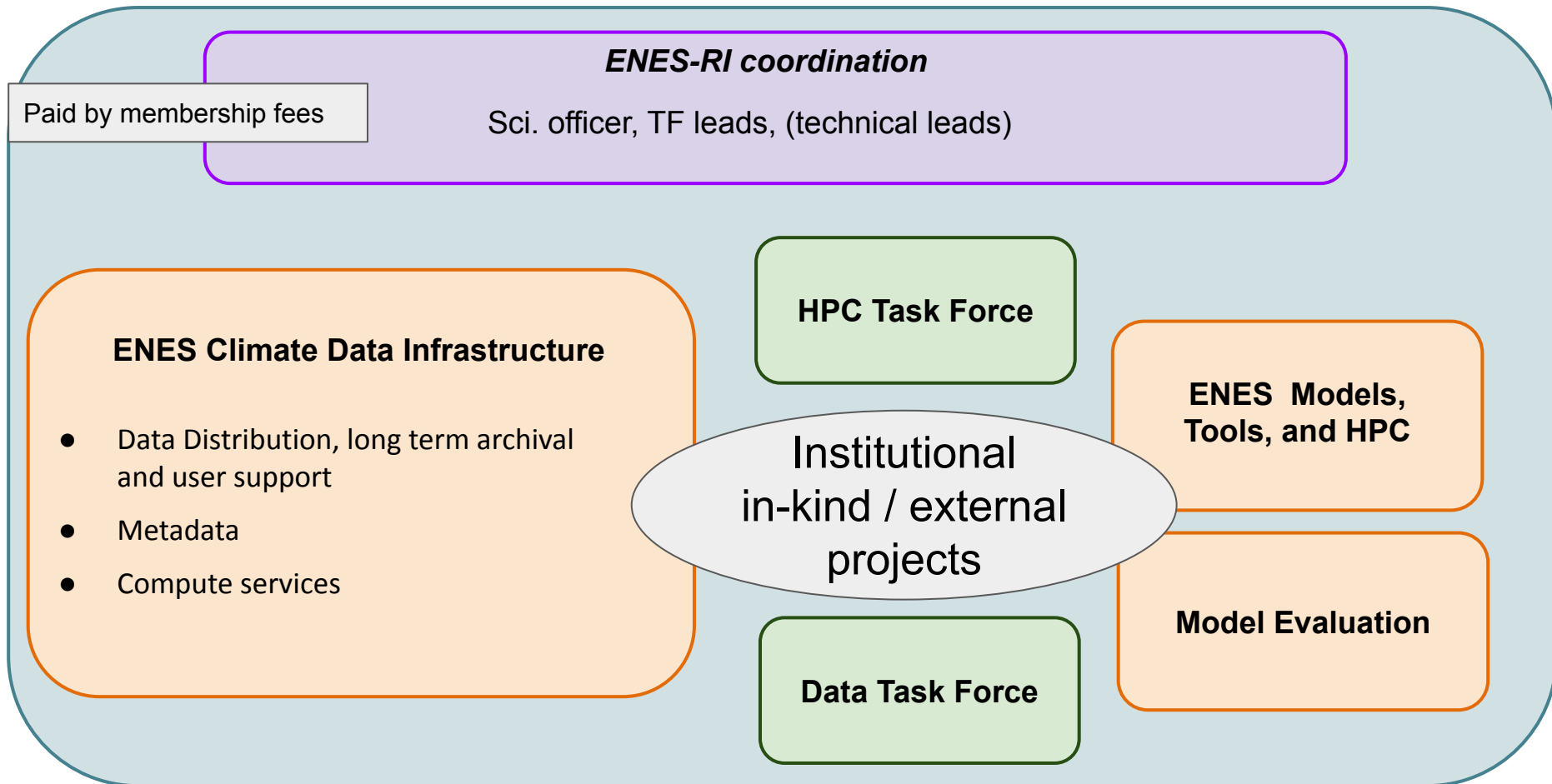
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- The **scoping phase** assessed the needs of the community and scope the vision for the future RI.
- The **design phase**: prepared a candidate proposal.
- The **implementation phase** is finalising the governance, and the legal and financial organisation of the structure.



Funded by partners

## Council

Governing Board  
Decision making body

## Executive Board

Elected from council  
Office members as observers

Interface with council  
Liaise with the office to provide advice  
where immediate action is required

Funded by memberships  
(initially 1 FTE)

## Office

- Scientific Officer
- Data Task Force Lead
- HPC Task Force Lead
- (Operational Lead)
- (Data Architect)
- (Chief Information Officer)

Coordinates and takes care of  
day-to-day running of the ENES-RI

Networking and coordination of ENES  
Models, Tools & HPC

Governance and coordination of ENES  
Climate Data Infrastructure (CDI)



- 10K€/y to institutions with *a larger role in Earth system modelling and/or ESM data usage*
- 5K€/y to the other institutions, with the exception of DKRZ which represents 2 of its members.

BSC	5
Cerfacs/Météo-France	10
CMCC	10
CNRS/IPSL	10
CSIC-IFCA	5
DKRZ (rep. AWI & MPI-M)	20
DLR	10
DMI	5
DWD	5

KNMI	5
MetNorway	5
MetOffice	10
NCAS (rep. CEDA)	10
NLeSC	5
NORCE	5
NSC	5
SMHI	10

Total: **130K€/y** to initially cover 1 FTE + running cost & office travel

## Data Distribution, long term archival and user support

Software development in support of ESGF	CEDA, DKRZ, IPSL
ESGF Data Services	CEDA, DKRZ, IPSL
IPCC DDC	DKRZ, CSIC-IFCA
Citation service	DKRZ
PID service	DKRZ
Replication (synda)	IPSL
Data statistics	CMCC
CDNOT	BSC, CEDA, CMCC, CNRM, DKRZ, DLR, DMI, DWD, IPSL, LIU, UNICAN

## Compute services

Data near processing environment	CEDA, CMCC, DKRZ, IPSL
C4I platform	Cerfacs, KNMI

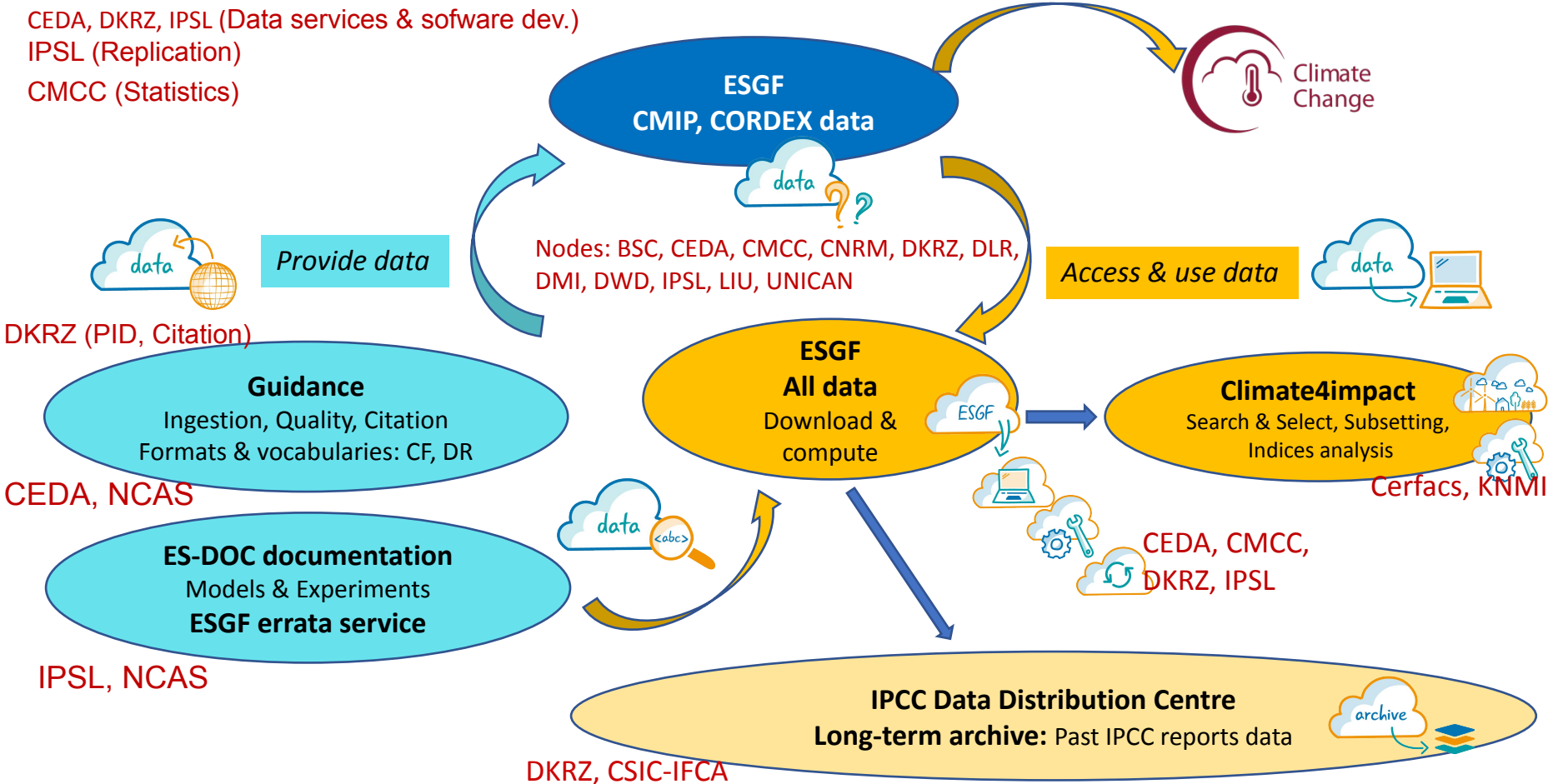
## Metadata

CF conv. support	CEDA, NCAS
Data Request	CEDA
ESDOC operational support	NCAS, IPSL
ESDOC Errata service	IPSL

## ENES Models Tools and HPC

OASIS coupler	Cerfacs, CNRS
XIOS I/O server	IPSL, Cerfacs
Cylc/Rose workflow manager	MetOffice
CDO	MPI-M
ESMValTool	DLR, MetOffice, NCAS, SMHI, BSC, NLeSC
NEMO/SI3	NEMO consortium

# ENES portfolio - zoom on CDI

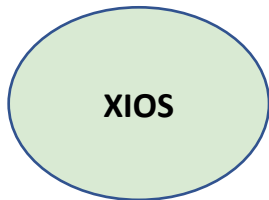




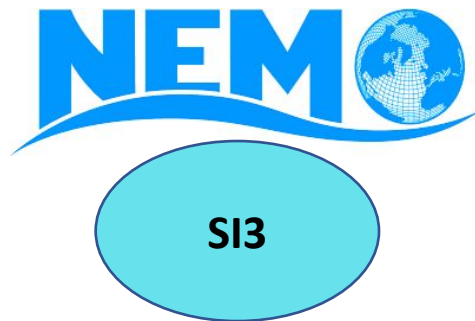
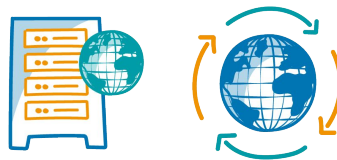
MetOffice



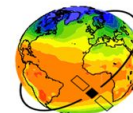
Cerfacs, CNRS



IPSL, Cerfacs



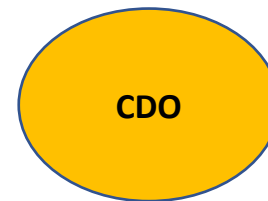
NEMO consortium



**ESMValTool**

Earth System Model Evaluation Tool

DLR, MetOffice, NCAS,  
SMHI, BSC, NLeSC



MPI-M

- **ENES-RI mission**
- **Decisions:**
  - Decision-making body: the council
  - Mechanism: consensus
- **In-kind:**
  - Obligation of in-kind service provision to be a member of the ENES-RI
  - In-kind contributions should not be specified in agreement because highly dynamical but will be reviewed by the council on a yearly basis
- **Host institution of ENES-RI office**
  - Plan A: DKRZ - current investigation of legal implications & feasibility (interaction with lawyers & screening from PLT)
  - Plan B: IPSL

The collaboration in the ENES-RI consortium aims to deliver a reliable, fit for purpose and agile research infrastructure.

The ENES-RI aims to:

- Provide a platform to integrate climate model data and to disseminate them within and outside the community;
- Provide a platform for sharing expertise on community tools development and use;
- Promote the ENES Research infrastructure, tools and services and the development of underpinning science and technology;
- Foster cooperation and coordination within its members in the field of data management, processing and dissemination;
- Foster collaboration among the modelling groups to speed-up the development and use of models of the complex Earth's climate system;
- Promote and coordinate the development of community tools, associated services and sharing of expertise (work program);
- Deliver common foresight strategies for the research infrastructure; and
- Integrate the contribution of the Climate Model data management community to the European Union initiatives for cross-community access and analysis.

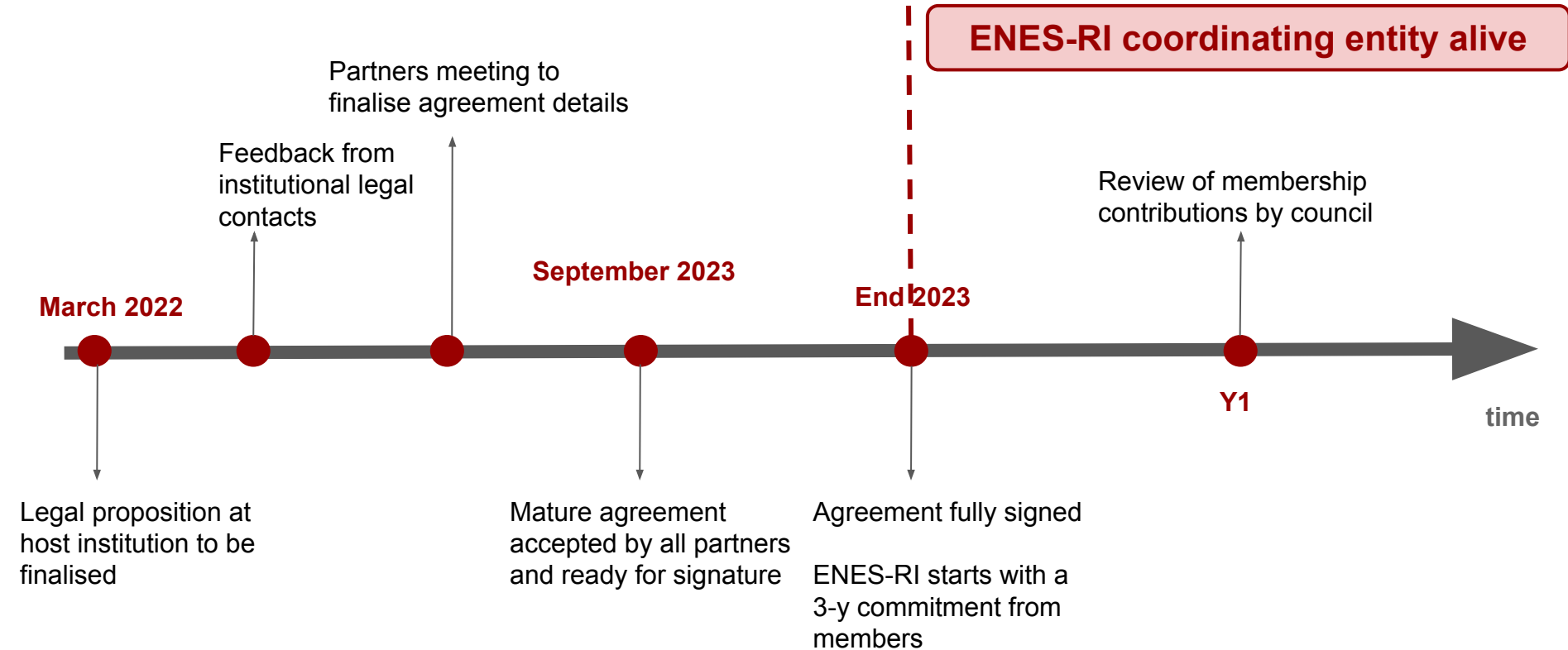
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- The ENES-RI provides essential infrastructure which underpins the production of synthesized research informing climate policy.
- Underfunding of RI might slow down science outcomes and prejudice adequate policy advice.
- The sustainability task of IS-ENES3 has carried out a complex process to design and implement a sustained ENES-RI with the support from European climate modelling research institutions.
- A few crucial steps are left to complete the process: final proposition by host institution and review & acceptance by legal departments.

## THE CONSORTIUM

Coordinated by CNRS-IPSL, the IS-ENES3 project  
gathers 22 partners in 11 countries



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Our website  
<https://is.enes.org/>



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