

# **Nuclear Innovation Cooperation**

*In the Low-Carbon Perspective*

## **NEA NI2050 Initiative Scope and Organisation**

*Marc Deffrennes*

**NI2050 Workshop July 2015**



# Technology Roadmap

Nuclear Energy

2015 edition

2035

2040

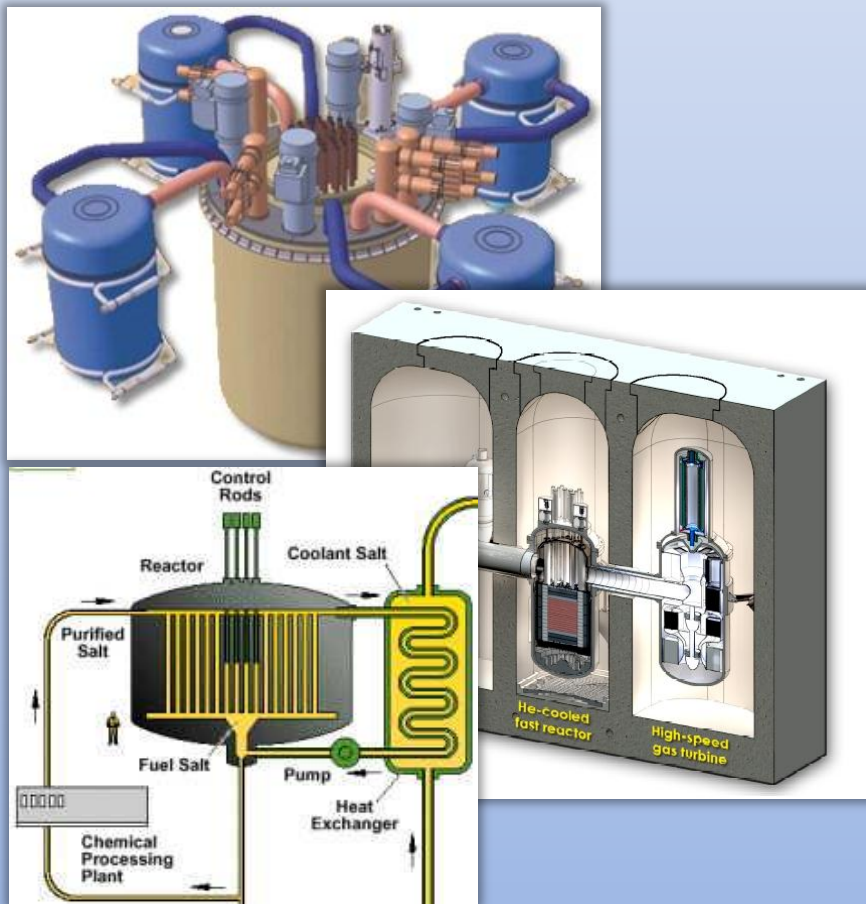
2045

2050





## *Nuclear Innovation 2050 – A Roadmap for the Future of Nuclear Fission Technology*



- What technologies will be needed in the coming decades to meet growing demand and align with policy goals?
- What research and development is needed to make these technologies available?
- Is the global community doing the R&D needed to prepare for the future? How to do better?

## *IEA Yearly Data Collection*

### *Gov't RD&D funding in the field of Energy*

### *Nuclear Energy:*

NUCLEAR FISSION RESEARCH BUDGETS in million USD									
	2005	2006	2007	2008	2009	2010	2011	2012	2013
Australia	23	18	15	24	3	3	3	11	8
Canada	242	229	260	216	341	332	125	91	16
France	690	673	645	621	589	532	592	681	
Germany	32	37	39	44	99	99	100	101	101
Italy	60	49	49	42	55	61	54		
Japan	2464	2318	2347	2343	2310	2269	1628		
Korea	217	228	231	67	79	85	112		
Netherland	13	13	14	13	10	12	11	7	
Norway	16	15	15	14	16	15	15	15	15
Sweden	6	6	6	6	7	7	2	2	2
Switzerland	26	29	29	31	30	30	28	28	28
USA	556	422	579	720	380	495	873	379	371
<b>TOTAL</b>	<b>4345</b>	<b>4037</b>	<b>4229</b>	<b>4141</b>	<b>3919</b>	<b>3940</b>	<b>3543</b>		

## *IEA « Nuclear Categories »*

### **4 Nuclear**

#### **41 Nuclear Fission**

**411 Light Water Reactors**

**412 Other Converter Reactors**

**4121 HWRs**

**4122 Others**

**Unallocated 412**

**413 Fuel Cycle**

**4131 Fissile Material recycling/reprocessing**

**4132 Nuclear waste management**

**4133 Others**

**Unallocated 413**

**414 Nuclear Supporting Technologies**

**4141 Plant Safety and Integrity**

**4142 Environmental protection**

**4143 Decommissioning**

**4144 Others**

**Unallocated 414**

**415 Nuclear Breeder**

**416 Other**

**Unallocated 41**

## *Existing « Roadmaps » and « cooperation frameworks »*

*- At national level – ia ongoing US INL*

*- At international level:*

*GIF, EU SNETP/IGDTP, NEA Joint Projects -  
Halden, IGORR, ICERR,...*

## ***NI 2050 – Scope and Approach***

*(extended NDD PoW item 5.6)*

**Step 1: Survey – scope (Prog and Infrastructures) and budgets**

**Step 2: Analysis and Prioritisation (Gaps and Roadmap)**

**Step 3: Cooperation Frameworks as appropriate**

***Launching Workshop: Paris 7 and 8 July: Invitation via the NDC AND THE HEADS OF MAIN RESEARCH ORGANISATIONS***

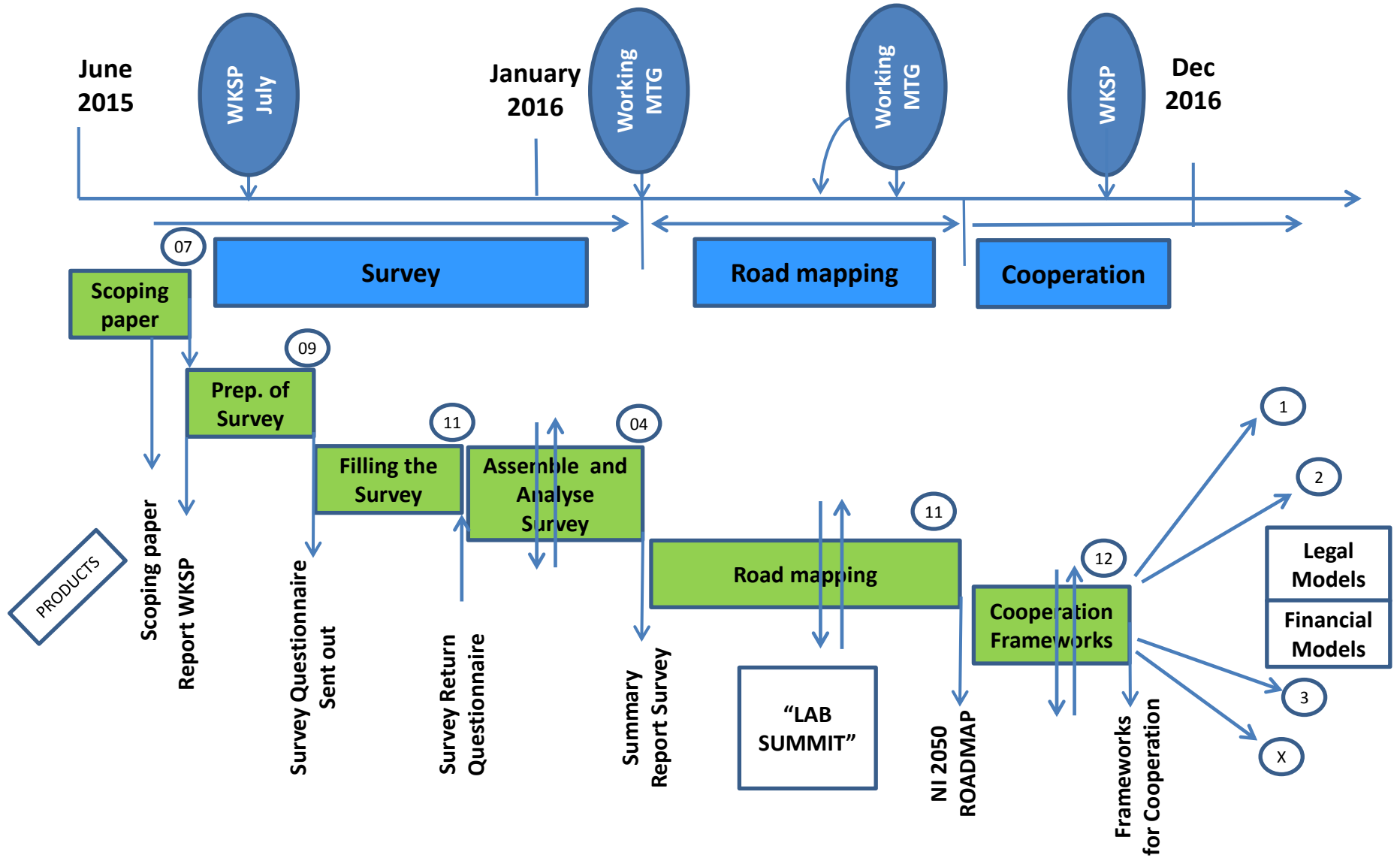
## *NI 2050 – Planning (and outcomes)*

<i>Scoping Paper</i>	<i>June</i>	
<i>Launch Workshop</i>	<i>7 and 8 July</i>	
<i>Survey OUT</i>	<i>September</i>	
<i>Survey IN</i>	<i>November</i>	<i>2015</i>
<i>Analysis of survey (+meeting)</i>	<i>April</i>	<i>2016</i>
<i>Defining gaps and roadmapping (+meeting)</i>	<i>November</i>	
<i>Ideas for Cooperation Frameworks (+wrkshp)</i>	<i>December</i>	

*Possibility for a « LAB SUMMIT » back to back with Meeting on Gaps and Roadmapping – second half of 2016*



## NI 2050 Process and timeline



## Just a possibility: NEA Joint projects: Working Together

### Sharing experimental infrastructure:

- Cost saving by putting resources together
- Generated safety relevant programmes that would have never happened if the individual countries were left alone with maintaining and operating a large facility (helped host countries to maintain important facilities)
- Creates data to support independent safety assessment of partners

### Procedure for establishing and conducting a Project:

- The Halden Project (1958) had a pilot function for establishing and managing a successful international project in reactor safety
- In 2002, general guidelines for initiating, financing and managing projects were issued, leaving a large degree of flexibility to the individual project; these guidelines have led inter alia to a standard form of OECD/NEA Agreement
- NEA plays an essential role in the initiation phase and supports the Project throughout its lifetime by giving administrative, advisory and technical support

## ***NI 2050 - Workshop Agenda***

### **Day 1 (full day):**

- **Intro – setting the scene and first reactions**
- **Presentations of National (and Euratom, IAEA) Programmes and perspectives (scope and budgets)**

### **Day 2 (am):**

- **Existing International Roadmaps and Cooperation**
- **Presentation and discussion of the NEA Survey (Step 1)**
- **Open discussion on the roadmapping and cooperation (Steps 2 and 3)**

## *NI 2050 – National Presentations*

BELGIUM – SCKCEN

CANADA – CNL

CZECH REPUBLIC – UJV REZ

FINLAND – VTT

FRANCE – CEA

GERMANY – HELMOLZ

HUNGARY – MTA

ITALY – ENEA

JAPAN – JAEA

KOREA – KAERI

NETHERLANDS – NRG

POLAND – NCBJ

RUSSIA – ROSATOM

SPAIN – CEIDEN

SWITZERLAND – PSI

UNITED KINGDOM – UKNNL

USA – INL

EUROPEAN COMMISSION – DG RTD + DG JRC

IAEA

**KEEP THE TIME  
PLEASE !!!!!**