



ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ, ΕΡΕΥΝΑΣ ΚΑΙ ΘΡΗΣΚΕΥΜΑΤΩΝ

Research and Innovation Strategies and Implementation for Smart Specialization (RIS3) in the Greek Energy Sector

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General Secretariat of Research and Technology

PROMITHEASNET 10TH INTERNATIONAL SCIENTIFIC CONFERENCE ON
ENERGY AND CLIMATE CHANGE

The pillars of National Smart Specialization 2014-2020

2





Priorities

- ▶ Agro and food
- ▶ Bio-sciences – Health – Pharma
- ▶ Information and communications technology
- ▶ **Energy**
- ▶ Environment and Sustainable Development
- ▶ Transport and logistics
- ▶ Materials – Construction
- ▶ Culture – Tourism and Creative industries

Data



Τεχνολογίες
Πληροφορικής
και
Επικοινωνιών

Πολιτισμός- Τουρισμός και Δημιουργική Βιομηχανία

Μεταφορές Logistics

Questionnaires

ΠΑΡΑΡΤΗΡΙΑ 1: ΣΥΝΟΠΤΙΚΟΙ ΟΡΟΙΣΜΟΙ ΤΩΝ ΕΡΕΥΝΗΤΙΚΩΝ ΕΠΙΣΤΗΜΩΝ					
ΕΡΕΥΝΗΤΙΚΟ ΠΕΔΙΟ	ΕΡΕΥΝΗΤΙΚΟΙ ΟΡΟΙΣΜΟΙ	ΕΡΕΥΝΗΤΙΚΟΙ ΟΡΟΙΣΜΟΙ ΤΩΝ ΕΠΙΣΤΗΜΩΝ			
		ΑΝΑΛΥΤΙΚΗ ΧΗΜΕΙΑ	ΒΙΟΧΗΜΕΙΑ	ΒΙΟΛΟΓΙΑ	ΒΙΟΦΥΣΙΚΗ
14. Επιστήμη Ενδοκρίνης	<p>Ενδοκρινολογία</p> <p>Επιστήμη που μελετάει τον ρόλο των ορμονών στην ανθρώπινη υγεία και ασθένεια.</p> <p>Ενδοκρινολόγος</p> <p>Επιστήμονας που μελετάει τον ρόλο των ορμονών στην ανθρώπινη υγεία και ασθένεια.</p>				

Αγροδιατροφή

Companies
Research Institutes
Ministries
Regions
Technology
demonstrators

Περιβάλλον

Studies



Βιοεπιστήμες

Υγεία και Φάρμακα

Υλικά - Κατασκευές

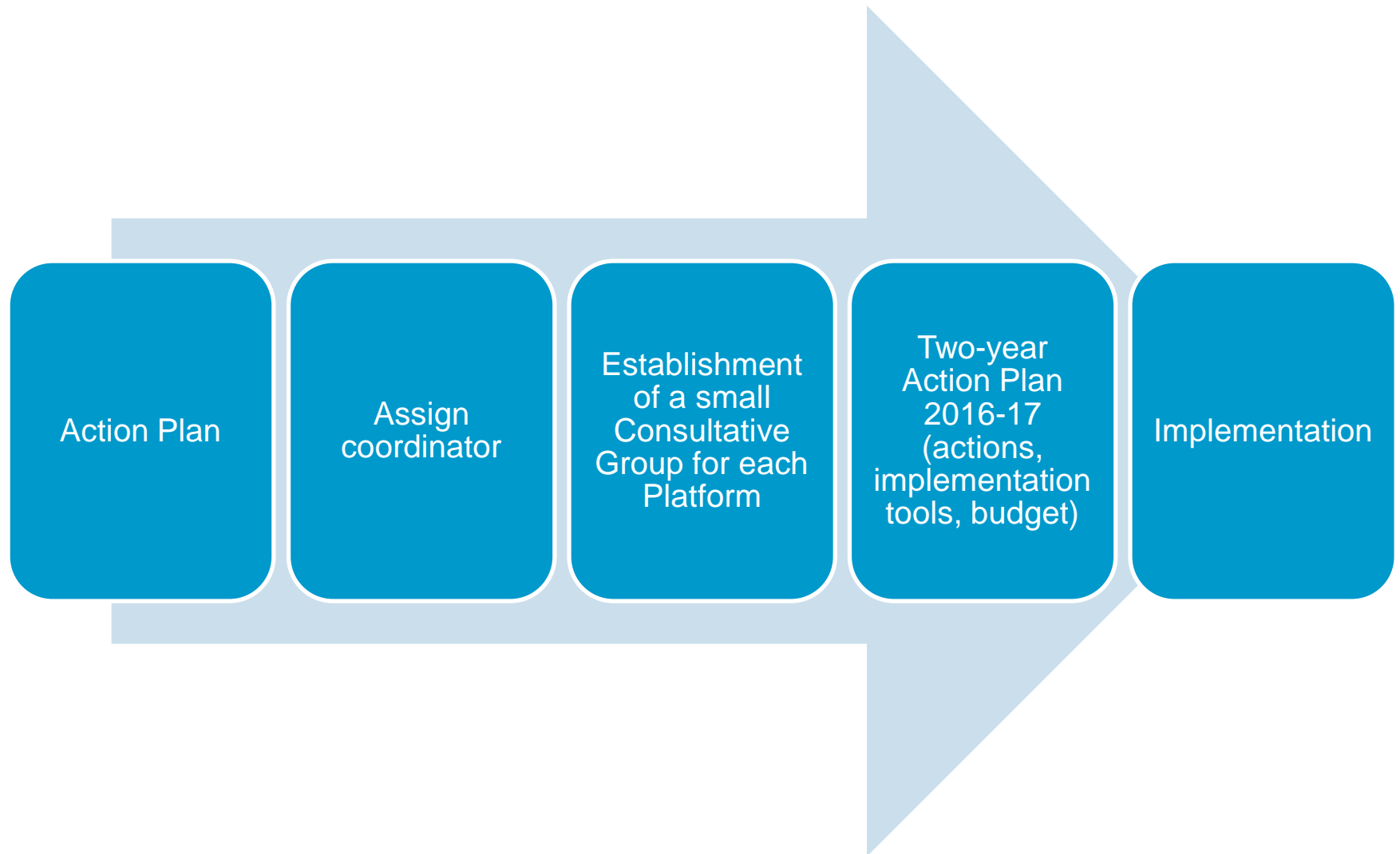
Ενέργεια

Meetings

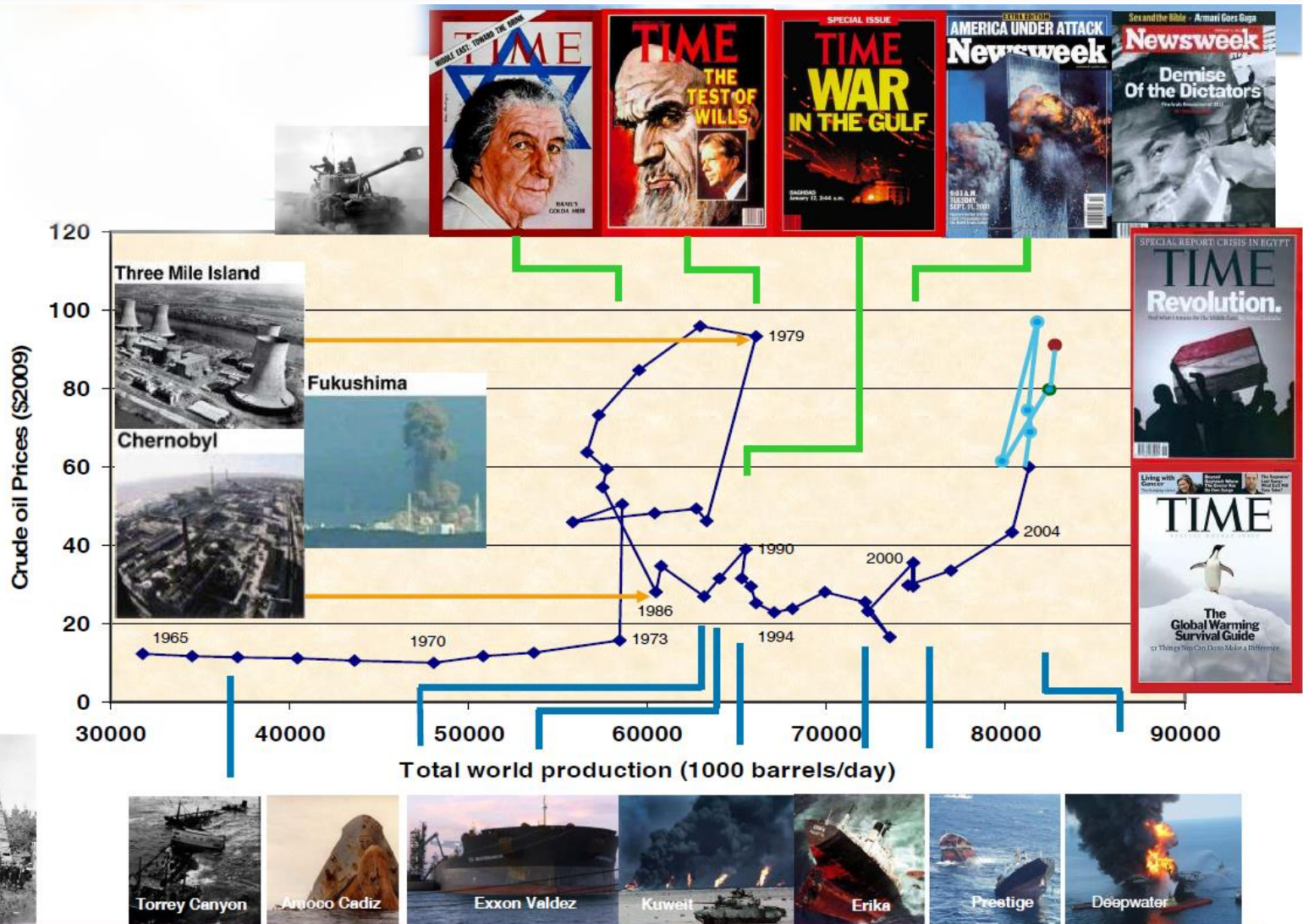




2nd round of entrepreneurial discovery 2015 - 2016



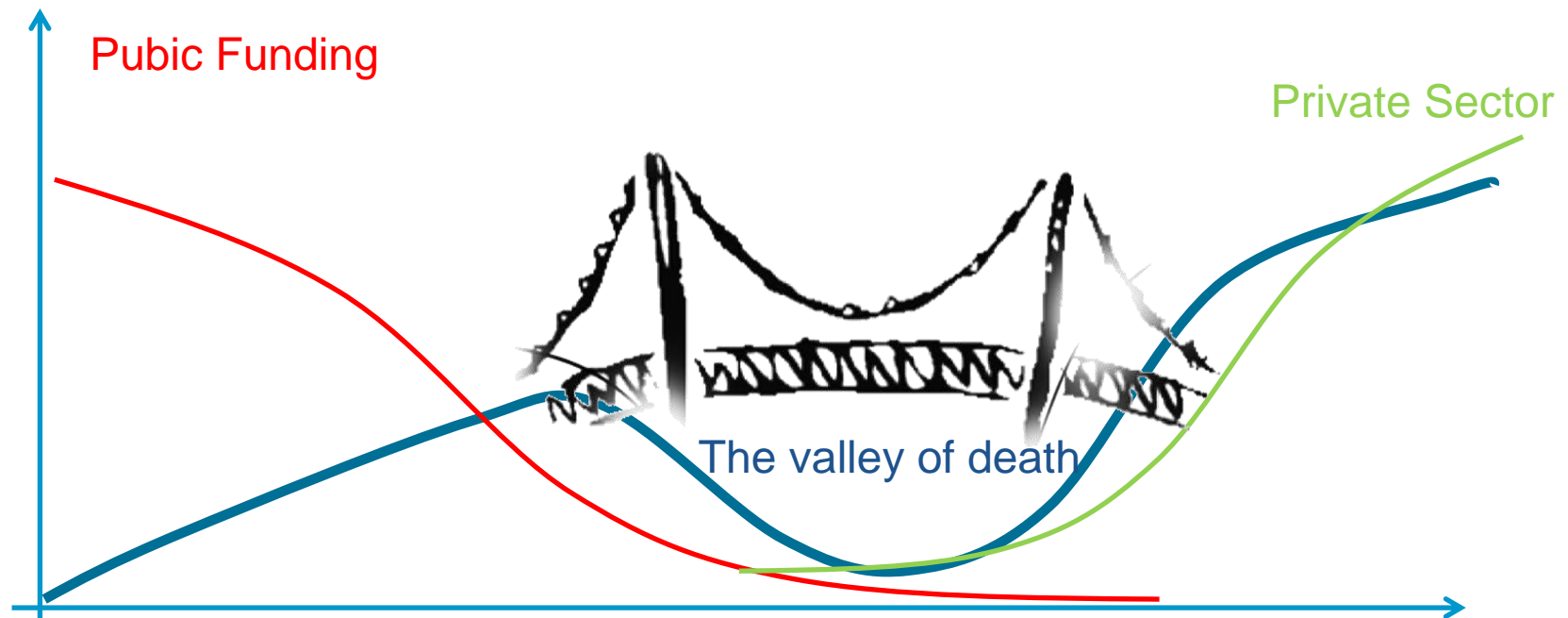
Energy – A multivariable sector



TRL – Technology Readiness Level

TRL	9	Actual Technology Proven Through Successful Use in an Operational Environment	Real World
	8	Actual Technology Completed and Qualified Through Tests and Demonstrations	
	7	System Prototype Demonstration in an Operational Environment	
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	6	System/Subsystem Model or Prototype Demonstrated in a Simulated Environment	Simulated World
	5	Component Validation in a Simulated Environment	
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	4	Component Validation in a Laboratory Environment	Research Lab
	3	Analytical and Experimental Critical Function and/or Characteristic Proof-of-Concept	
	2	Technology Concept and/or Application Formulated	
TRL	1	Basic Principles Observed and Reported	

En-route to commercial technologies



Criteria



Promotion through Entrepreneur Discovery



Critical Mass of companies



Research capacities



Significant Social and Economic Impact



Technological upgrade of the sector



Export character

Energy – Topics



Energy 7.1 Energy Efficiency	<p>7.1.1 New solutions for heating and cooling, using low enthalpy heat sources. Emphasis on the improvement of system's reliability and automated operation.</p> <p>7.1.2 Increasing dynamics of application of measures for improving energy efficiency in the industry and tertiary sector. Creation of economic and technical tools that facilitate decision making, and the strengthening of corporate policy towards energy efficiency.</p> <p>7.1.3 Increasing of energy efficiency in energy intensive industries – Utilization of residual heat – Utilization of RES</p> <p>7.1.4 Lowering the cost of refurbishment / transformation of existing buildings to nearly zero energy footprint. Application and RES technologies and energy storage.</p>
7.2 Energy production from RES	<p>7.2.1 Concentrated solar systems / Development of solar collectors / systems for thermal energy production at higher temperature ranges. Applications of heat storage technologies.</p> <p>7.2.2 Solar Thermochemical technologies, processes and applications. Technologies that allow the use of solar energy in the industry.</p> <p>7.2.3 Solar cooling. Development of integrated hybrid technologies, with competitive costs, efficiency, and availability (backup systems), easy to install, control and operate.</p> <p>7.2.4 Wind Energy with emphasis on the development of the potential to erect off shore wind farms.</p> <p>7.2.5 Hydroelectric plants with emphasis on online monitoring, flexible operation & environmentally acceptable use of river waters</p> <p>7.2.6 Technologies for the production of power from low enthalpy heat.</p>
7.3 Energy in combination with agricultural Environmental Sectors	<p>7.3.1 Developing energy technologies that allow the creation of value chains for the exploitation of locally available biomass. Systems to meet the energy needs of local communities.</p> <p>7.3.2 Development and optimization of technologies for the energy production from agricultural residues and recovered materials from industries, bioliquids, biological resources, wastes / scrap. Emphasis on improving system reliability, automated operation and the environmental performance of such technologies.</p> <p>7.3.3 Development & Optimization of biomass to power or second-generation biofuel technologies. Emphasis on improving system reliability, automated operation and the environmental performance of such technologies.</p>
7.4 Energy Storage	<p>7.4.1 Development of local / small-scale technologies and applications for storage of electrical or thermal energy.</p> <p>7.4.2 Develop new or improved storage technologies with higher performance, availability, durability, performance, safety and lower cost (supercapacitors, new battery technologies).</p> <p>7.4.3 Development & Demonstration of energy storage technologies based on electrochemical techniques for non-interconnected networks or remote network locations / RES applications.</p>

Energy – Topics



7.5 Hydrogen Technologies

7.5.1 Development of power generation systems from fuel cells with integration of intelligent diagnostic systems. Deployment / Demonstration of an energy storage application so that suppliers, manufacturers, and end users gain the experience required to integrate the application. Assessment of benefits for the electricity grid, of the potential for increasing efficiency, and reducing costs.

7.5.2 Development of technologies for the production, recovery, purification and storage of hydrogen from biogas or its production by means of water electrolysis for use in fuel cells in the transport sector. Development / Demonstration of a local H₂ production for use in local transport systems.

7.6 Smart Grid Technologies

7.6.1 Techno economic evaluation of the application of services and smart grids, energy storage and degree of electrical system integration with increased renewable energy shares towards a more efficient, reliable distribution network. Development of forecasting tools of demand, profiles of demand, forecasting of load, smart metering, safe handling of data, tools for the optimization of distribution network, balancing, control, monitoring, integration of electrical energy storage, autonomous networks and planning of demonstration activities..

7.6.2 New methodologies and tools for the development and planning of the power transmission network. Development of algorithms for the real time data collection from large volume of data (data mining), optimization of distributed power production, cost – benefit evaluation for choosing between network expansion options, confirmation of network influence of network designs of integrated architectures, devices of energy flow control, optimization of topology etc. Tool that take into account climatic & operational conditions, the lifetime costs of equipment, forecasting and tracing failures, forecasting RES production taking into account weather data, historical data, and real time measurements.

7.7 Fossil Fuels– Reduction of impact

7.7.1 Effective technologies for converting CO₂ to chemicals / fuels. Enhancement of technology availability, allowing periodic operation, cost reduction, and the integration of products in the chemical industry, ability to operate in areas with low carbon emission profile and integration with RES.

7.7.2 Flexible and efficient fossil fuel based power plants. (a) Flexible power production systems; (b) Energy storage systems.

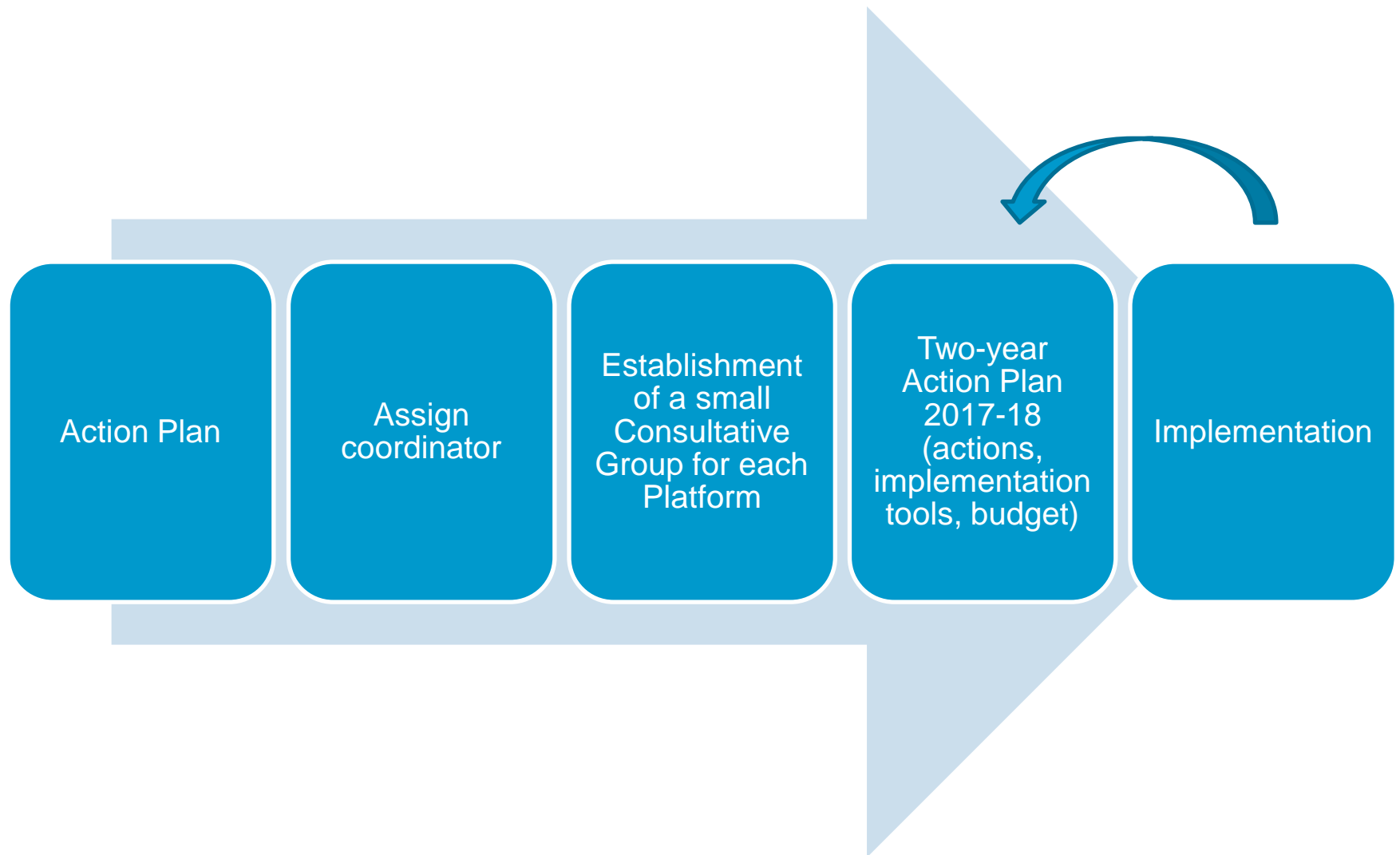
7.7.3 Reduce the CO₂ footprint of energy intensive industries either with CO₂ capture systems or by process intensification. Change of production schemes, CO₂ capture with provision for use / storage. Measures to avoid carbon leakage.

7.7.4 Innovative processes for intensifying the use of fossil fuels. Changing production schemes, new processes, maximizing the yield of added-value products , Utilizing heavy oil cuts for synthesis gas production ,etc.

Submitted Proposals

7 Energy	Number of Proposals
7.1 Energy Efficiency	46
7.2 RES	36
7.3 Energy for Agriculture and Environment	22
7.4 Energy Storage	21
7.5 Hydrogen Technologies	8
7.6 Smart grids	32
7.7 Fossil fuels – reducing effects	19

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Thank you for your attention

Information : www.gsrt.gr