

1st IEF-EU Energy Day
Preceding the 7th IEA-IEF-OPEC Symposium on Energy
Outlooks

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The Saudi Energy Efficiency Center (SEEC)

OVERVIEW

- SEEC was established by the council of ministers to enhance **energy efficiency** and raise awareness on the topic
- SEEC is administered by a committee that includes **ministries and gov't entities** as well as **representatives from the private sector**

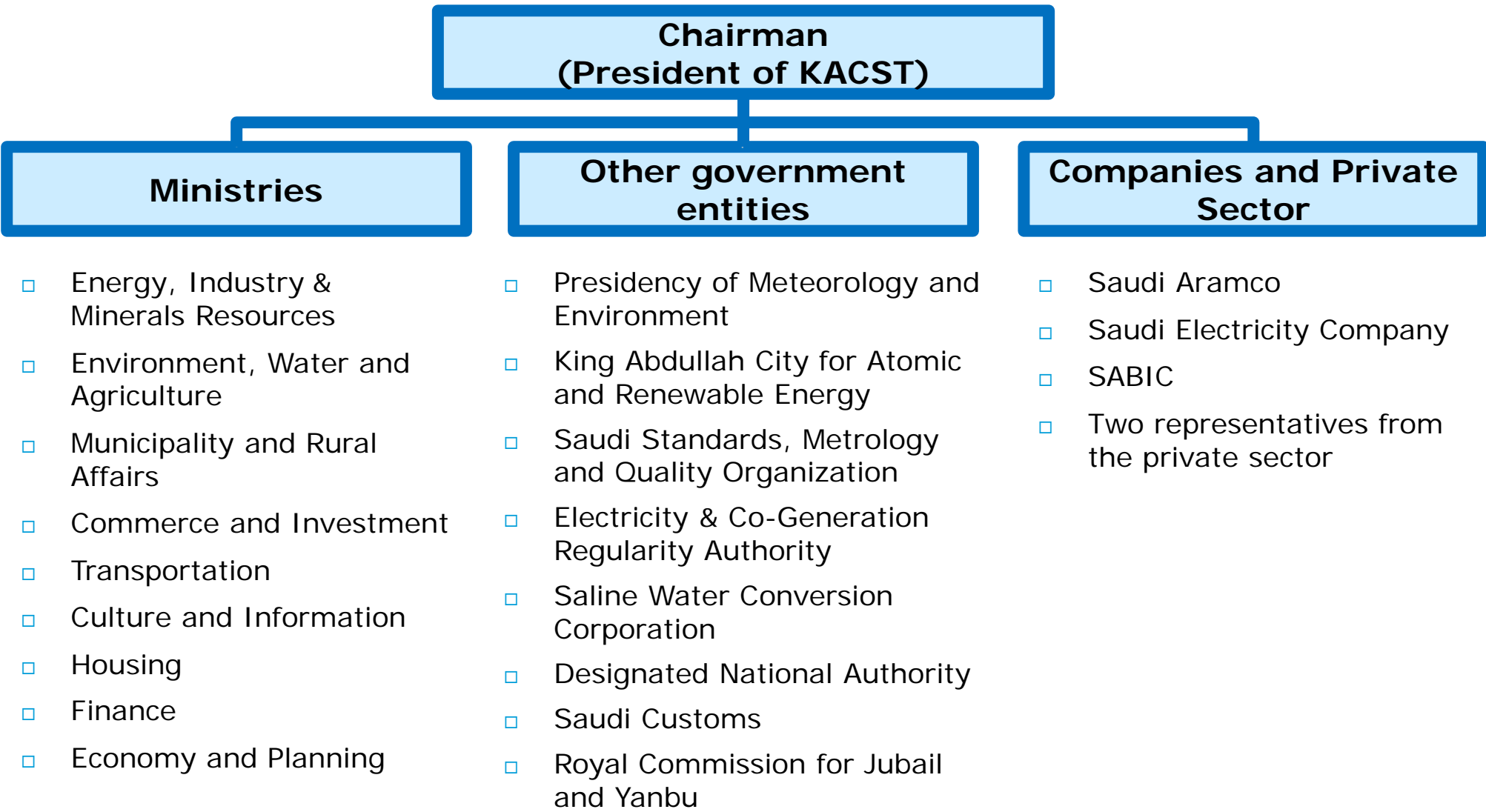


المركز السعودي لكفاءة الطاقة
Saudi Energy Efficiency Center

MANDATE

- Set up a **national program** to rationalize energy and enhance energy efficiency
- Develop **policies, regulations and rules** and support implementation
- Raise **awareness** on energy rationalization and energy efficiency
- Participate in the execution of **pioneering projects** in energy efficiency

SEEC was Established through a Council of Ministers Resolution in 2010 to be the custodian of demand-side energy efficiency in the Kingdom with a governing board represented by key stakeholders



The Saudi Energy Efficiency Program has been a journey

2010

2012

2013... Today

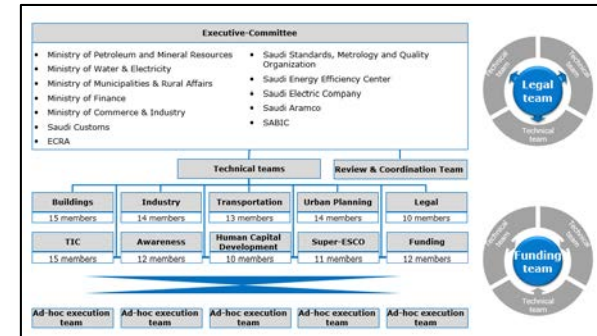


SEEP

SEEC was established and mandated to develop **the Saudi Energy Efficiency Policy**

Inter-agency effort to launch the **Saudi Energy Efficiency Program (SEEP)**, with guiding principles, a clear strategy and strong governance, focusing on three sectors (**Building, Transport, Industry**) representing 90+% of the energy consumption

- Full-fledged program with **12 teams** (150+ professionals from 30+ entities)



- **84 initiatives** at different stages (feasibility, design, execution)

	INITIATIVES IN 2013	INITIATIVES IN 2014	INITIATIVES IN 2015
Feasibility study	Large A/C standard	EE targets	EE plan for building sector
	Commercial lighting standard	EE framework for non-industries	Assessments/retirement of inefficient LVMS and MVMS
	Thermal insulation standard	Redevelopment of inefficient lighting	Evaluating feasibility of EE initiatives
Design	SBC-EEI update low rise	Partial Commissioning	Partial Commissioning
	SBC-EEI update high rise	2013 Awareness Campaign	Extending MERS to new industrial equipment
	SBC-EEI update medium rise	Generalized Social Responsibility initiative	Extending MERS to new industrial equipment
	EE standard and awareness	Strategic Policy (SAP)	Developing implementation plan for SEEP
	Full Economic Audit	Make goods standard (Cable, Switch, Tables, ...)	Human capital development plan for SEEP
	Three utility standard, and enhanced	Thermal insulation standard	EE standards for large A/C, commercial & street lighting
	EE for HVAC	SBC-EEI update low rise	Update on Smart Building Green building BEE
	'Lead' in new government buildings	SBC-EEI update high rise	Increase street outdoor penetration
	'Lead' in existing government buildings	SBC-EEI update medium rise	Facilitate building
	SEEP Funding for EE retrofitting in industry	EE standard and awareness	Evaluating and finalizing the standard
Execute	Early retirement of inefficient A/C	Three utility standard, and enhanced	Enhancing implementation for thermal insulation
	Assessment/retirement of inefficient LVMS	EE for HVAC	Enhancing implementation for thermal insulation
	EEI certification codes	'Lead' in existing gov. buildings	Product enhancement for large A/C lighting products
	Super-ESCO	SEEP Funding for EE retrofitting in government buildings	EE framework and management of EE implementation
	'Lead' to market' EE UP	Early retirement of inefficient A/C	Partial Commissioning
	EE UP national regulations	'Lead' to market' EE UP	Enhancing and finalizing the standard
	2014 awareness campaigns	EE of industrial regulations	Enhancing and finalizing the standard
	University Initiative	Large A/C standard	Product enhancement for large A/C lighting products
	Corporate Social Responsibility initiative	Commercial lighting standard	EE framework and management of EE implementation
	Strategic Media Initiative	Human Capital Development	EE plan for building sector

The Saudi Energy Efficiency Center was founded to enable the Kingdom to embark on an ambitious Energy Efficiency journey

SEEP is focused on three sectors, representing 90+% of the energy consumption

INDUSTRY



TRANSPORTATION



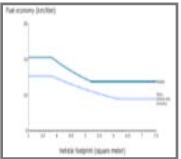

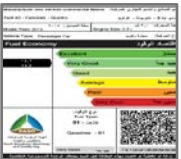


BUILDINGS



SEEP Guiding Principles

- 1 Focus on demand side energy efficiency
- 2 Do not include price reforms
- 3 Design initiatives while ensuring no negative impact on end users
- 4 Achieve consensus with all involved stakeholders

We have designed and issued 3 energy efficiency standards and regulations for the transportation sector

Initiative	2012 - 2014	2015 & 2016
 <p>Fuel economy standard for light duty vehicles</p>	<ul style="list-style-type: none"> • Issued the fuel economy standard in November 2014 inspired by the NHTSA CAFE standard 	<ul style="list-style-type: none"> • Developed a fuel economy software that automates CAFE calculation • Enforced the fuel economy standard
 <p>Tire Rolling resistance/ wet grip</p>	<ul style="list-style-type: none"> • Issued a standard in April 2014 based on the work done by the EU 	<ul style="list-style-type: none"> • Developed a label software to simplify the issuing process • Enforced the standard in November 2015
 <p>Fuel economy label</p>	<ul style="list-style-type: none"> • Issued standard in December 2013 • Started implementing the standard in August 14 	<ul style="list-style-type: none"> • Conducted several market surveillance campaigns • Developed a label software to simplify the issuing process
 <p>HDV regulations</p>	<ul style="list-style-type: none"> • Held expert calls with international entities to understand the scope of potential HDV initiatives 	<ul style="list-style-type: none"> • Drafted a first version of the aerodynamic regulation and shared it with the manufacturers
 <p>On the road program</p>	<ul style="list-style-type: none"> • Benchmarked scrappage programs that take place around the world 	<ul style="list-style-type: none"> • Analyzing the feasibility of the program implementation

We have started enforcing the energy intensity targets for existing and new plants in the industry sector, as well as the electric motor standard

Initiative

2012 - 2014

2015 & 2016

New and existing plants energy efficiency standards

- Developed baseline and benchmarked **180+ Saudi plants** from 61 different production processes
- Agreed with industries on **aspirational EE improvement level** (within 2nd quartile of the 2011 global benchmark by year 2019)
- Developed **enforcement mechanism** with 11 government entities to leverage their current mandates to help plants reach their aspirational improvement level and **signed a joint agreement in this regard.**

- Following-up on **the implementation of the EE framework** for existing plants:
 - Collected the annual data and issued the gap analysis reports for **180+ plants / production lines**
 - **Collected and reviewed the energy efficiency improvement** plans for 20+ companies (representing 150+ plants)
- Enforcing the EE framework for new plants:
 - Targeted level: **average of the 1st quartile** of global benchmark

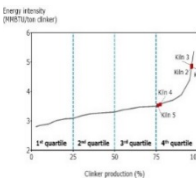
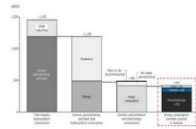
Electric motors standard

- Issued standard in December 2013 (SASO IEC 60034-30)
- Announced the standard and the enforcement timeline


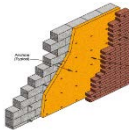




- Started implementing the standard in August 2015

Energy Management System




- Establishing energy management (ISO50001) supporting system



We have designed and issued 18 energy efficiency standards and regulations for the buildings sector

Initiative	2012 - 2014	2015 & 2016
 <p>Air Conditioners</p>	<ul style="list-style-type: none"> Issued the small AC standard in 2012 according to the ASHRAE values Started the enforcement of stage 1 of the small AC standard in 2013 	<ul style="list-style-type: none"> Started the enforcement of stage 2 of the small AC standard in 2015 and launched a new update of the standard in 2016 Designing, in collaboration with AHRI, the large AC standard
 <p>Thermal insulation</p>	<ul style="list-style-type: none"> Issued 13 thermal insulation standards Issued a thermal insulation regulation for new buildings in collaboration with ASHRAE Started enforcement of both the products and the regulation 	<ul style="list-style-type: none"> Continued enforcement of both the products and the regulation 10's of design offices were prevented from dealing with the municipality for violating thermal insulation regulation.
 <p>White goods</p>	<ul style="list-style-type: none"> Issued the standards in 2013 (refrigerators, freezers, washing machines) 	<ul style="list-style-type: none"> Started enforcement and launched a new update of the washing machines standard in 2016
 <p>Water heaters</p>		<ul style="list-style-type: none"> Started developing a new standard
 <p>Lighting</p>		<ul style="list-style-type: none"> Issued first part of the lighting product standard in Q3 2015 Designing the second part of the lighting product standard
 <p>Saudi Building Code (SBC)</p>		<ul style="list-style-type: none"> Updated, in collaboration with ASHRAE, the energy efficiency section of the SBC

Regulatory control played a strong role in prevention of non-compliant products

Year	Products monitored	Enforcement results				
2014		Date	Feb. – Sep.		Nov.	
		Product type	ACs		Insulation materials	
		# Factories	5		49	
		# Market outlets	85		0	
		# Non-compliant	~963k		~508k tons	
2015		Date	Feb. - May	Feb.	Aug. – Oct.	
		Product type	Appliances	Fuel economy (FE)	Appliances	
		# Factories	18	0	10	
		# Market outlets	2400	800	~1200	
		# Non-compliant	~13k	~2k	~82k	
2016		Date	May	May & Nov.	July	Aug.
		Product type	Appliances	FE	Insulation	Lighting
		# Factories	36	0	47	11
		# Market outlets	1400	4k	0	0
		# Non-compliant	~8k	~600	~22k	~90k

We have started implementing EE Urban Planning guidelines into national regulations and are progressing on developing the DC market

Initiative

2012 - 2014

2015 & 2016



Urban planning guidelines for energy efficiency

- Developed EE **urban planning guidelines for new developments** and aligned with all relevant stakeholders

- Integrating the EE urban planning guidelines into **national-level planning regulations**



District cooling regulations

- Develop high-level district cooling **regulatory and financial framework**

- Designated the Electricity and Cogeneration Regulatory Authority - **ECRA as the DC regulator**
- Issued council of minister resolution for **mandating District Cooling in government projects** when meeting the set criteria
- Developing the economic, licensing and technical regulations (ECRA)



National District Cooling Company

- Conducted_a feasibility study on the establishment of a **National District Cooling Company** to support the deployment of DC in the Kingdom

We've continued the development of the ESCO sector through the launch of the S-ESCO and establishment of the required infrastructure

Initiative

2012-2014

2015 & 2016



ESCO market
feasibility

- Conducted a **feasibility study** to determine the **commercial attractiveness** of a government owned company that will **fund and manage** retrofit projects
 - Setup a national ESCO (Super-ESCO)
- Established the **National ESCO Company (S-ESCO)**
- **Launched pilot ESCO projects:** Retrofit the Ministry of Energy, Industry and Minerals Resources building
 - Savings worth ~36% of annual consumptions, 4 year payback



ESCO market
enablers

- Identify **key barriers** to industry development including technical, financial, and legislative issues
- Defined the optimum **ESCO industry structure** for the Kingdom to overcome barriers and launched
- Established a **licensing scheme** for energy companies in the Kingdom
- Developed a national **measurement and verification user guide** as a **reference for savings calculation** in retrofit projects

To support these opportunities, we launched Human Capital Development program that targets university, vocational and professional students

Universities

Offering an **EE university course** in 5 engineering schools



King Abdulaziz University

Technical and vocation training

Preparing to offer a **EE technician degree** with a local institution (Vocational Training e.g. National Power Academy)

Professional training

in Cooperation with (AEE)

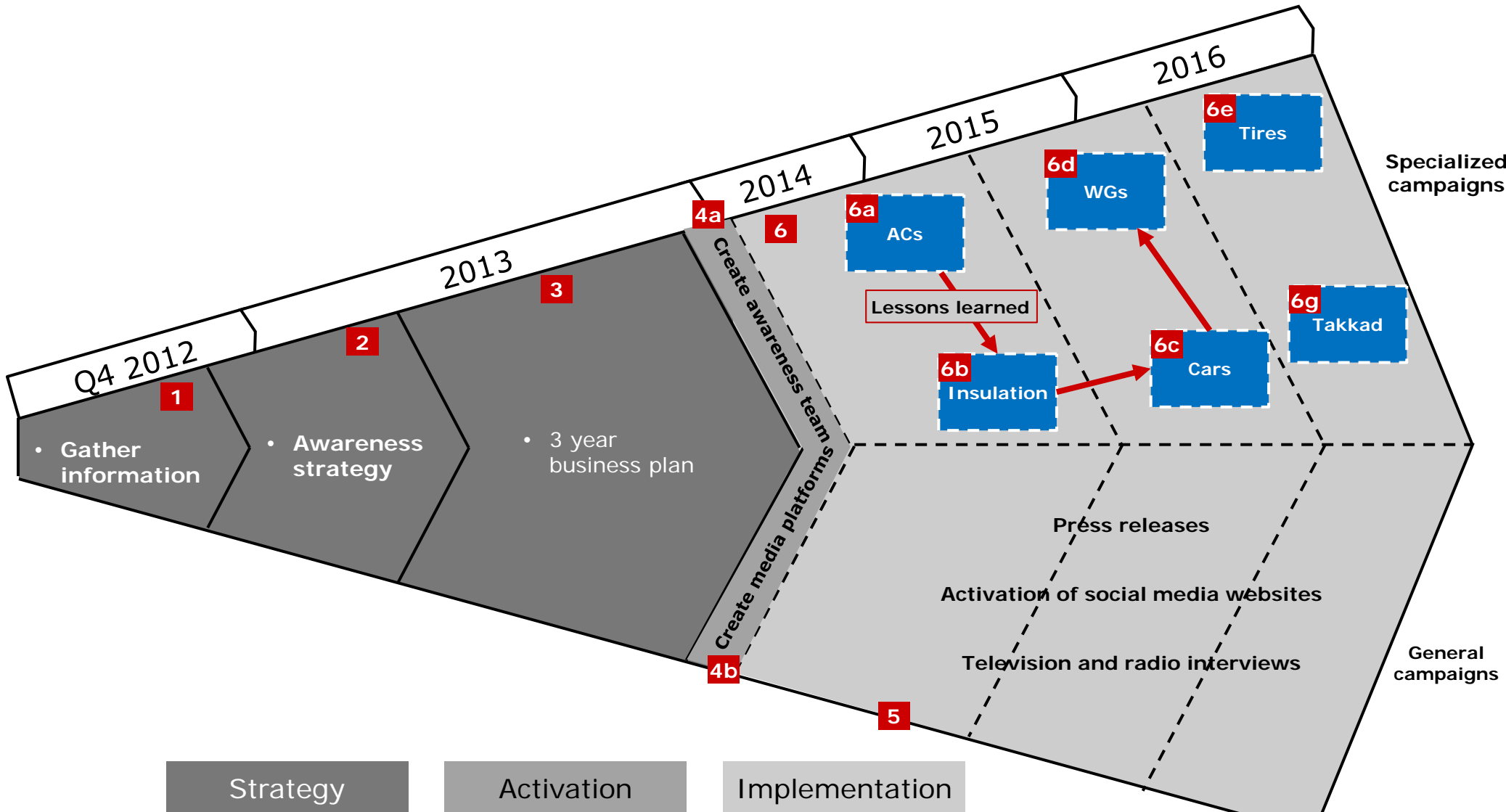


Offered first **Certified Energy Manager (CEM) certification** in Saudi (Nov. 2015)



- ✓ 4 courses EM, 112 attendees, 42 CEM
- ✓ 1 course EA, 20 Attendees, 13 CEA
- ✓ 1 course M&V, 11 attendees, 3 CMVP
- ✓ 16 Certified Trainers

We have targeted the public with general awareness and specialized campaigns to support the launch of the EE initiatives



Strategy

Activation

Implementation



Thank you...