KACST Science & Technology National Outreach Strategic Plan

Executive Summary

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1   Project Overview

The dramatic increase in oil prices has created significant resources and rapid growth for the Saudi economy. There is a new level of determination to leverage this opportunity to build a truly competitive economy and diversify beyond natural resources. To support this effort the National Science and Technology Policy, developed in 2002 sets clear goals for KSA to become a regional leader in Science, Technology and Innovation (ST&I) by 2015, an Asian leader by 2020 and to fully transition to a knowledge-based economy by 2025.

Figure 1: National Science and Technology Policy
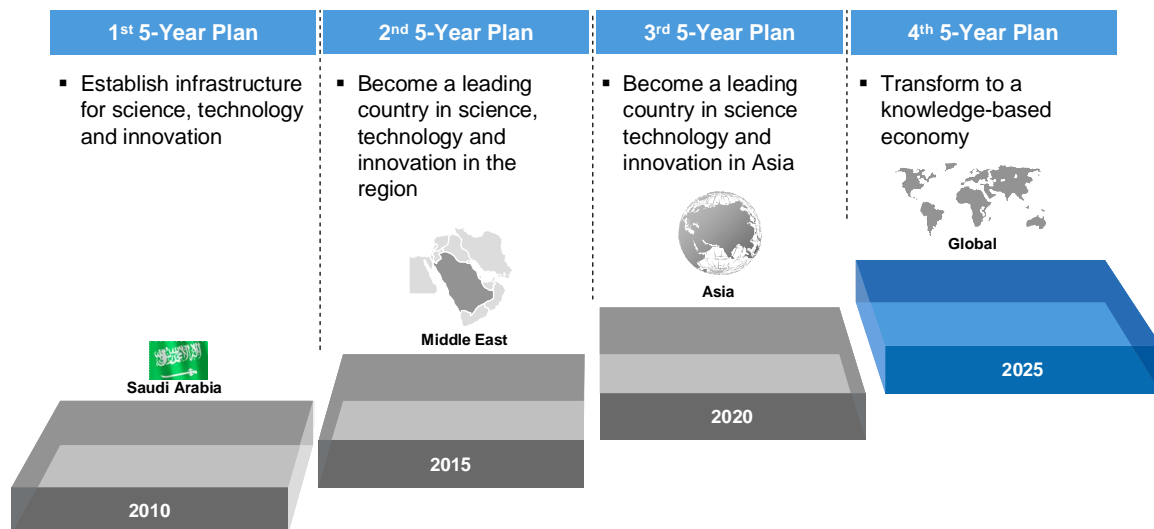
For the Science & Technology (S&T) policy to succeed, leading institutions within KSA must play a key role in promoting science and technology within all segments of population. King Abdulaziz City for Science and Technology (KACST), at the forefront of scientific development, has recently commissioned the development of a S&T outreach strategic plan to support the long term promotion of a scientifically aware society within KSA. In particular, KACST aims to:

- Become a portal for the promotion of science and technology within society
- Encourage, facilitate and support scientific knowledge dissemination to promote scientific awareness in society
- Develop science and technology outreach programs in coordination with stakeholders to help achieve vision to become a world-class science and technology organization that fosters innovation and promotes knowledge-based society in the Kingdom

This document presents an executive summary overview of KACST strategic plan for S&T outreach in KSA. The document will:

- Summarize key findings from KACST/Scientific Awareness and Publishing (SAP) Baseline and International Benchmarking analysis
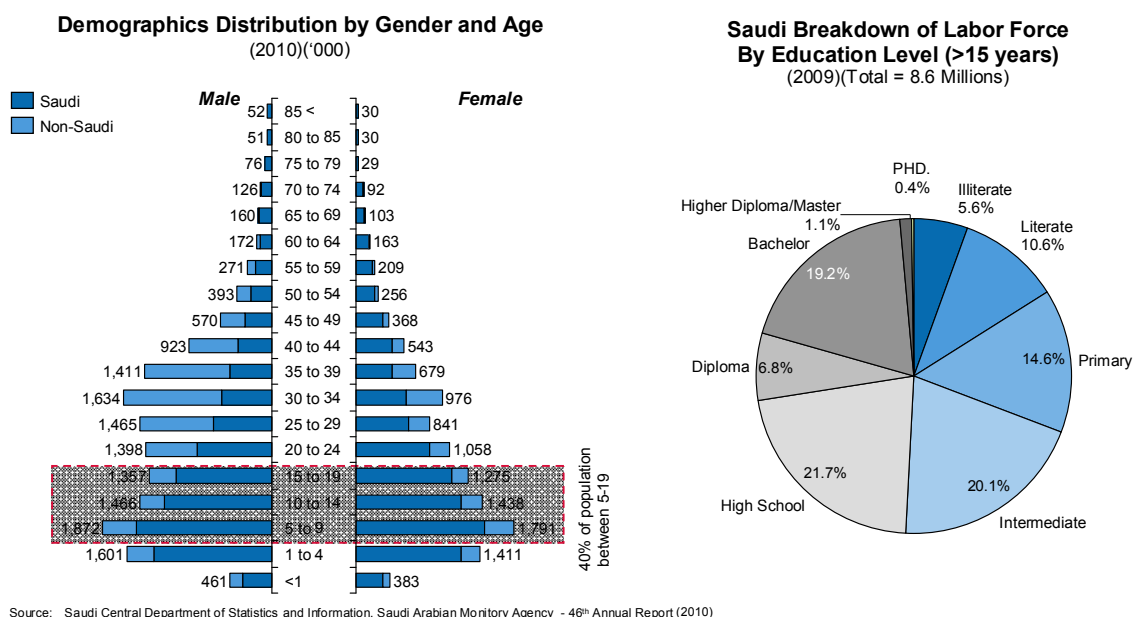
- Present a summary of the analysis performed to prioritize key stakeholders for KACST S&T outreach

- Summarize analysis performed to derive and identify key strategic themes for the KACST S&T outreach

- Present a summary of each strategic theme and prioritized key initiatives associated

- Highlight key performance indicators and outline the implementation plan

2 Baseline & International Benchmarking Analysis

To ensure the strategy set is aligned with both the internal realities on the ground in KSA and the capabilities and mission and vision of KACST, a thorough baseline of S&T perceptions, metrics and needs within KSA society was captured. This baseline is then paired with a strategic analysis of international, relevant benchmarks and best practises to foster an understanding of how the international community promotes S&T and how this can be made relevant to Saudi society. This section of the analysis involves a baseline and aspirations analysis resulting in a comprehensive GAP and SWOT synthesis of KSA and KACST as well as Best-in-class benchmarking with a synthesis of lessons learned.

KSA is characterized by a young and literate population with a general affinity to fields of science and technology in bachelor and higher education studies. Around 40% of population in KSA is between the ages 5 and 19. Around 27% of the labor force (above 15 years of age) has diploma, bachelor, or higher education.

Figure 2: KSA Population Demographics and Breakdown by Education

Demographics Distribution by Gender and Age
(2010)('000)

Saudi
Non-Saudi

Male	Age	Female
52	85 <	30
51	80 to 85	30
76	75 to 79	29
126	70 to 74	92
160	65 to 69	103
172	60 to 64	163
271	55 to 59	209
393	50 to 54	256
570	45 to 49	368
923	40 to 44	543
1,411	35 to 39	679
1,634	30 to 34	976
1,465	25 to 29	841
1,398	20 to 24	1,058
1,367	15 to 19	1,275
1,466	10 to 14	1,438
1,872	5 to 9	1,791
1,601	1 to 4	1,411
461	<1	383

40% of population between 5-19

Saudi Breakdown of Labor Force By Education Level (>15 years)
(2009)(Total = 8.6 Millions)

- PHD. 0.4%
- Higher Diploma/Master 1.1%
- Bachelor 19.2%
- Diploma 6.8%
- High School 21.7%
- Intermediate 20.1%
- Primary 14.6%
- Literate 10.6%
- Illiterate 5.6%

Source: Saudi Central Department of Statistics and Information, Saudi Arabian Monitory Agency - 46th Annual Report (2010)

Around 28% of students of bachelor or higher education are in study fields in relation to science, technology, engineering, or mathematics. In addition, there are more than 16,000 schools and universities across KSA.

Figure 3: Students Enrolled in Science and Technology related Programs at Universities

Breakdown by Field of Studies for Students in KSA
(2007-2008 New and Existing Students /
Bachelor and Higher Education)

Field	%
Human Studies	22%
Educational Studies	14%
Business and Management	12%
Islamic Studies	9%
Social Sciences	6%
Press and Media	3%
Training Teachers	2%
Social Services	1%
Arts	0%
Law	0%
Other	3%
Health	5%
Biology	5%
Physics	5%
Informatics	4%
Maths and Statistics	4%
Engineering & Manufacturing	3%
Other Stem	1%

Total STEM = 27.4%

Total Schools and Universities Distribution in KSA
(By Region)

Legend
Number of Schools
Number of Universities

Source: Central Department of Statistics and Information, Ministry of Economy and Planning, Ministry of Education,

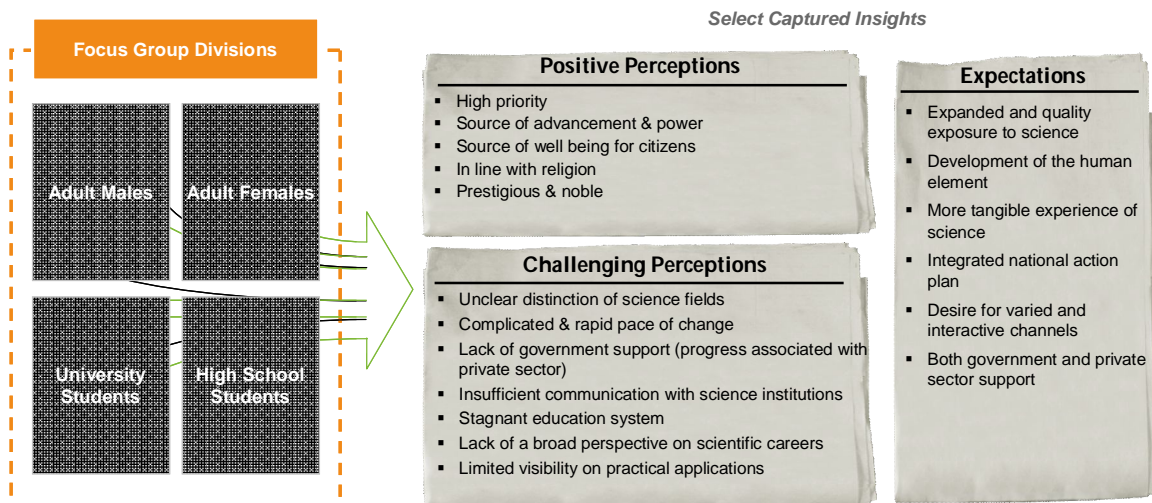To better understand Saudi citizens perceptions and expectations around S&T, a market research firm was retained to conduct focus groups of relevant defined segments of the Saudi population. Focus groups revealed Saudi citizens express desire for greater exposure to science and technology. They believe S&T is a source of advancement, power, and well being to citizens. They however believe there is limited visibility on practical applications. Their expectations revolve around expanded and quality exposure to science and technology, and a desire for more tangible experience.

Figure 4: Scientific Awareness Focus Groups (Riyadh, Jeddah, Dammam) (2011)

Select Captured Insights

Focus Group Divisions

Adult Males
Adult Females
University Students
High School Students

Positive Perceptions
- High priority
- Source of advancement & power
- Source of well being for citizens
- In line with religion
- Prestigious & noble

Challenging Perceptions
- Unclear distinction of science fields
- Complicated & rapid pace of change
- Lack of government support (progress associated with private sector)
- Insufficient communication with science institutions
- Stagnant education system
- Lack of a broad perspective on scientific careers
- Limited visibility on practical applications

Expectations
- Expanded and quality exposure to science
- Development of the human element
- More tangible experience of science
- Integrated national action plan
- Desire for varied and interactive channels
- Both government and private sector support

Overall the baseline analysis resulted in key learning's regarding S&T outreach in KSA and generally established, among others, a foundation upon which to base KACST strategy going forward.

Nevertheless, KSA still has mediocre rankings along key relevant indices, as defined by global institutions, such as the World economic Forum, reflecting insufficient Science and Technology outreach.

Figure 5 – KSA Rankings along key Relevant Indices

KSA Rankings along Key Relevant Science & Technology Awareness Indices
(2010)

S&T Index	Rank	Value / Index	Regional Benchmark
Quality of Education System	41st	N/A	Qatar: 4th
Secondary Education Enrolment Rate	43rd	N/A	Bahrain: 36th
Availability of Scientists and Engineers	34th	N/A	Qatar: 9th
KSA Share of Global Research Output	N/A	0.17%	Turkey: 1.7%
Global Share of Research Outputs in Mathematics	N/A	0.32%	Turkey: 1.3%
Global Share of Research Outputs in Physics	N/A	0.11%	Iran: 0.76%
Global Share of Research Outputs in Chemistry	N/A	0.15%	Iran: 1.68%
Availability of Research and Training Services	34th	N/A	UAE: 23rd
Internet Users	58th	N/A	UAE: 10th
Property Rights	28th	N/A	Bahrain: 21st
Firm Level Technology Absorption	26th	N/A	UAE: 5th

NON-EXHAUSTIVE

Composite Index - Selected Relevant Indices[1]
(2010)

Sweden	7.3
USA	6.7
UAE	6.0
Bahrain	5.8
KSA	5.3
Qatar	5.3
Kuwait	4.6

0 2 4 6 8
Not at all   Widely Available

Note: The composite index averages a number of WEF indices, namely: Quality of education, secondary and tertiary enrolment rates, availability of scientists and engineers, availability of research and training, internet users, internet bandwidth, property rights, intellectual property protection, availability of latest technology, and firm level technology absorption
Source: The Global Competitiveness Report (2010-2011), WEF, Global Research Report Middle East, Thomson Reuters,

KACST is well positioned to play on key strengths to help promote S&T in KSA. In particular, KACST has:

- *Established relationships with universities and schools in KSA*; Strong relationships with universities in KSA covering university departments, colleges, research institutes, with activities covering workshops, competitions and promotion of scientific research Strong links with ~6.6k schools spanning various regions in Saudi Arabia

- *Established Relationships with Saudi Industry*; Strong ties with prominent private sector companies in Saudi Arabia such as Almarai, Aramco and Sabic. Relationships to transfer major scientific and technological breakthroughs to the various industries

- *National, Regional and International Partnerships*; Established relationships with ministries, research institutions, and scientific associations in KSA. Strong ties with Arab scientific institutions providing publications and scientific networking. International partnerships to develop science journals across technologies

- *Strong Commitment*; Vision to become a world-class science and technology organization fostering innovation and promoting a knowledge-based society in the Kingdom. Strong leadership commitment and high budget allocation for R&D, and the promotion of science and technology in KSA

Despite some current efforts in KACST to promote S&T, yet a more structured and focused approach is still to be developed. While there has been significant efforts to reach out to stakeholders there is no centralized, planned and well documented approach. KACST Scientific Awareness and Publishing department (SAP) has been promoting S&T outreach mostly via publications and some few other communication channels. It is currently considered the internal printing house for KACST. There is no integrated S&T outreach promotion strategy; services are not targeted (e.g. magazines do not have a clear audience) and are offered to all stakeholders. SAP overall activity has focused much energy on implementation with little or no strategic planning, feedback collection and maintenance of existing initiatives. Online presence is still insufficient, and the relationships with the media are transactional

To better understand best practices and extract relevant learning's, the strategy entailed benchmarking institutions with S&T outreach mission. Benchmarks focused on positioning, initiatives and channels of service.

Figure 6: Benchmarked Organizations
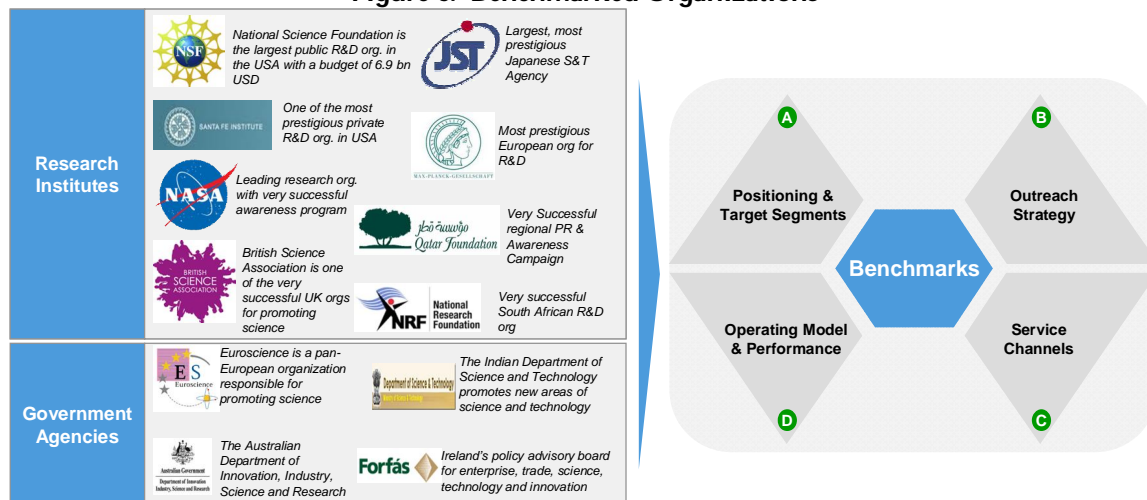
The remainder of this section overviews findings along the benchmarking framework.

A- Positioning & Target Segments

Benchmarks revealed that creating S&T awareness requires a strategic approach for outreach with the public through various scientific communication channels. Often cutting edge scientific exploration is not tangible nor relevant to the public and requires significant effort to "dumb down" or make "relevant". Older research institutions tend to benefit from an "age effect" increasing prominence. Institutes (especially publically financed institutes) are increasingly focusing awareness strategies on the promotion and encouragement of Science, Technology, Engineering and Mathematics, 'STEM', education due to its benefit to the long term

competitiveness of nations. Thought Leadership and Visibility are not necessarily directly associated in R&D firms. Creating awareness requires a strategic approach to outreach with the public through various scientific communication channels.

Figure 7: Benchmarked Organizations Strategic Positioning
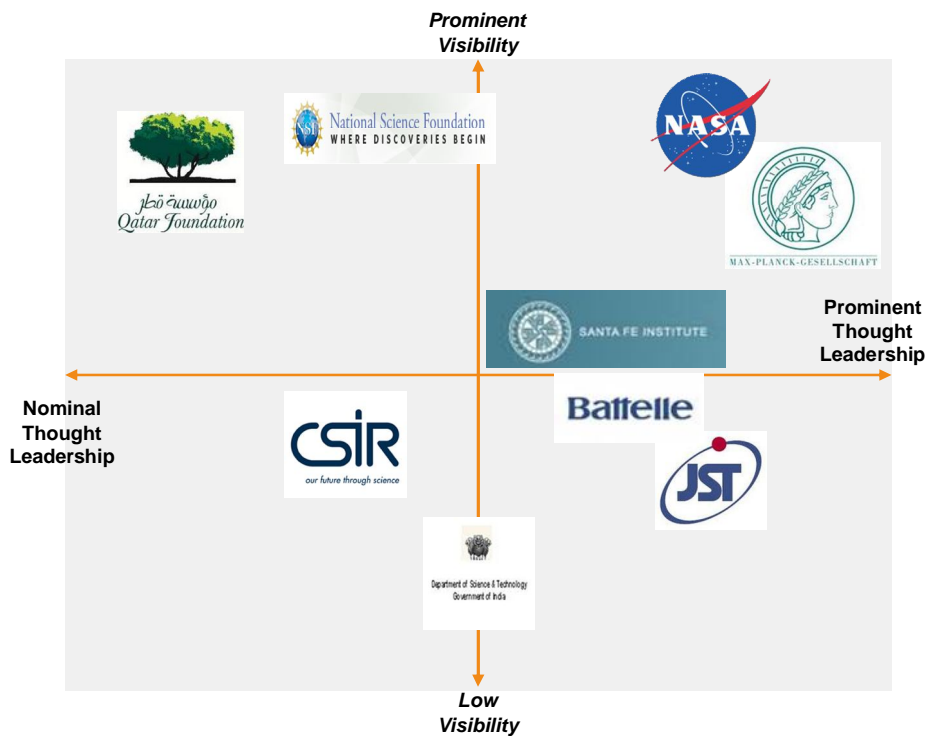
While a full spectrum of audiences can be targeted for S&T outreach most institutions choose to focus on only a few. Most organizations target efforts toward select target audiences while maintaining links with critical segments, as illustrated in Figure 8. Battelle, for example, focuses on the private sector and industries, while Nasa's focus mainly involves schools and universities, the general public, media, and policy makers.

Figure 8: Institution focus on Target Audience
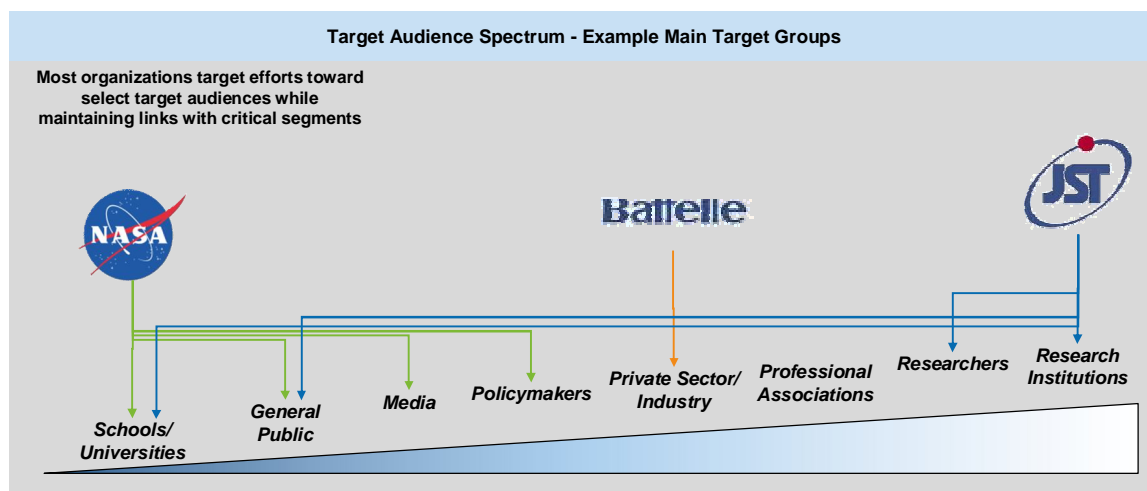
B- Outreach Strategies

Outreach strategies are driven by stakeholders needs, involve a large yet focused set of initiatives, and leverage partnerships. A set of five key learning's were distilled:

- *Stakeholders driven strategic themes:* The stakeholders an institution targets for scientific outreach and promotion typically drive its strategy and the associated initiatives. JST, for example, has five major streams for the promotion of S&T tailored to each stakeholder (Creating advanced Tech targeting researchers and institutions, tech transfer & innovation targeting universities, etc.)

- *Large Set of Underlying Initiatives*: A large set of S&T outreach initiatives are launched offering a multitude of dimensions for creating an S&T Outreach Strategy; prioritization to maximize returns is key. The Indian Department of Science and Technology, for example, is involved in a multitude of activities, including women scientist programs, scientific & engineering research, and local technology development

- *Focused Initiatives*: Institutes (especially publicly financed institutes) are increasingly focusing outreach strategies on the promotion and encouragement of 'STEM' education due to its benefit to the long term competitiveness of nations. Outreach activities aimed at general public are designed to be fun/engaging, focusing on applied S&T and its benefits. A cornerstone of Nasa's outreach strategy is the promotion of STEM education. Battelle for Kids is involved in a large variety of conferences and publications

- *Partnerships & collaboration*: Some strategic initiatives involve know-how and expertise and require partnering with other institutions rather than bringing implementation in-house. For example, the NSF outreach strategy typically involves partnering with other institutions with complementary capabilities

C- Service Channels

Overall, benchmarks use multiple service channels to promote scientific awareness. These are the platforms and tools which act as conduits to reach the selected stakeholder

- *Magazines*: Each organization typically publishes a quarterly general science publication, with informative messages, also covering the research institute research activities, general interest themes, etc

- *Books*: Research institutes typically partner with a publication house to publish books; either via special agreements or joint ventures in the book publishing industry. Editorial Boards typically consist of members form both within and without the institute

- *Awards*: Awards can target four distinct segments of society and act as recognition and an incentive to learn science.

- *Portals and new media*: Scientific organizations' portals are powerful tools for promotion of scientific awareness either via the institutes' website or specially dedicated portals. Portals also act as searchable databases for the institutes research activities. Presence on New Media is important, however dedicated teams are required to successfully manage the process

- *Events and workshops:* Some research institutes organize events that have acquired significant notoriety in the country (e.g. the British Science Association). Events act as a direct outreach between the institute and the target audience

Benchmarks as well pursue several initiatives for science and technology outreach. Institutes and associations typically publish general science publications which serve to showcase the institution. In addition, nations seeking to promote science have localized the content of international magazines and supported local publications. Figure 14 shows magazine publication published by China, UAE and Turkey. S&T organizations have also introduced awards for students, junior scientists, general scientists and specialized scientists to recognize their achievements. And scientific organizations' websites have become very powerful tools for the promotion of scientific awareness. Also indicated are the websites of several S&T organizations. The National Science Foundation (NSF), for example, developed an engaging and interactive portal to promote science among students, teachers and parents as shown in the same figure. Furthermore, a strong presence on social networks such as Facebook or Twitter ensures active engagement with connected generations. Euroscience and NASA have an extensive presence on a large selection of social media including Facebook.

Events/workshops also act as direct outreach channel between institutes and the target audience. They can be targeted at the general public or specialized groups. The NSF has a conference for helping scientists communicate science as seen in Figure 9.
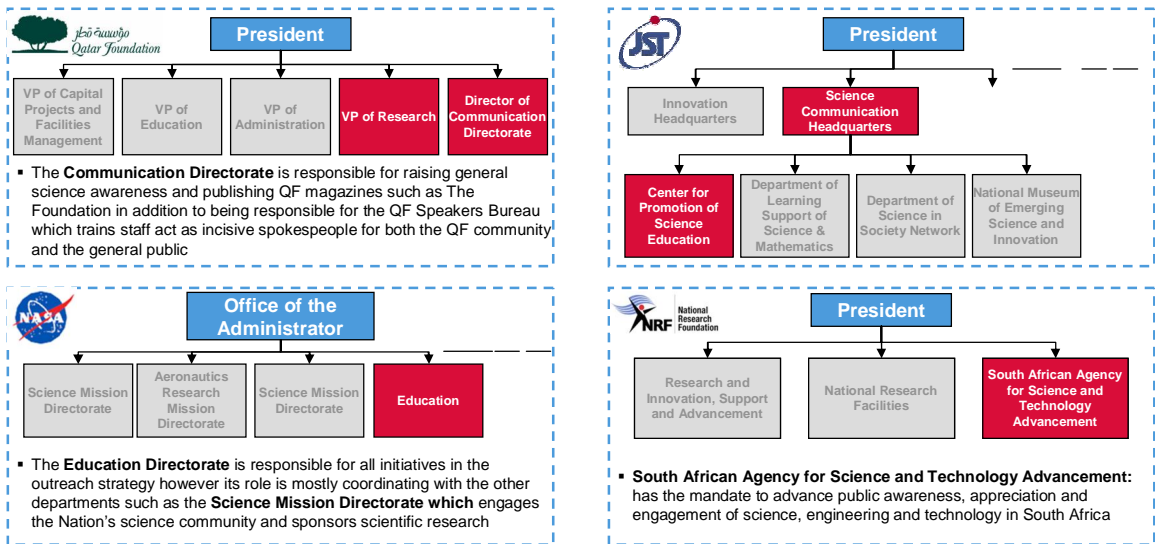
Figure 9 : Examples of S&T Outreach Initiatives
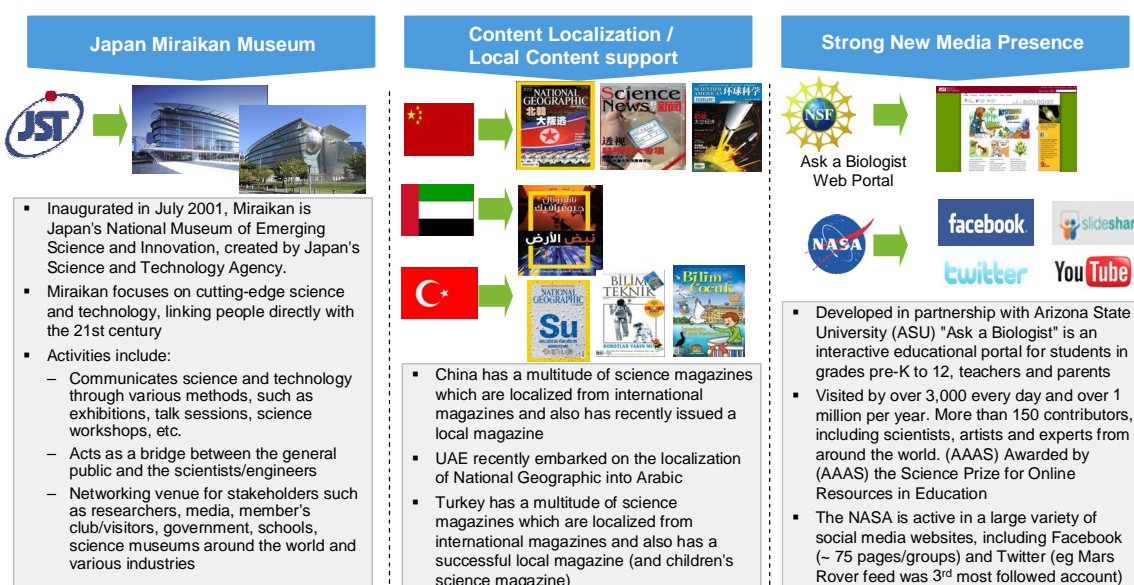
C- Operating Models

To ensure effective execution, most institutes have dedicated entities for promoting science, in coordination with technical departments, as illustrated in Figure 10.

Figure 10 : Operating Models Benchmarks

- The **Communication Directorate** is responsible for raising general science awareness and publishing QF magazines such as The Foundation in addition to being responsible for the QF Speakers Bureau which trains staff act as incisive spokespeople for both the QF community and the general public

- The **Education Directorate** is responsible for all initiatives in the outreach strategy however its role is mostly coordinating with the other departments such as the **Science Mission Directorate which** engages the Nation's science community and sponsors scientific research

- **South African Agency for Science and Technology Advancement:** has the mandate to advance public awareness, appreciation and engagement of science, engineering and technology in South Africa

3   Stakeholder & Strategic Themes Development

A four-step approach is followed to develop KACST strategic priorities for S&T outreach, as illustrated in Figure 11: Initially, (1) Key Learning's from the Baseline and Benchmark studies are incorporated into a Gap analysis to compare KSA on ground reality and KACST current activities with international best practices and identify design imperatives for the strategy going forward. These Strategic Design Imperatives are then critically analyzed in a SWOT (Strength, Weakness, Opportunity, Threats) synthesis. Next, (2) stakeholders are analyzed, prioritized and assessed, and content strategic themes that fit these stakeholders are reviewed. Accordingly, (3) strategic priorities are developed and detailed into initiatives for implementation. Finally, (4) KPIs are designed to measure progress and an implementation plan is developed.

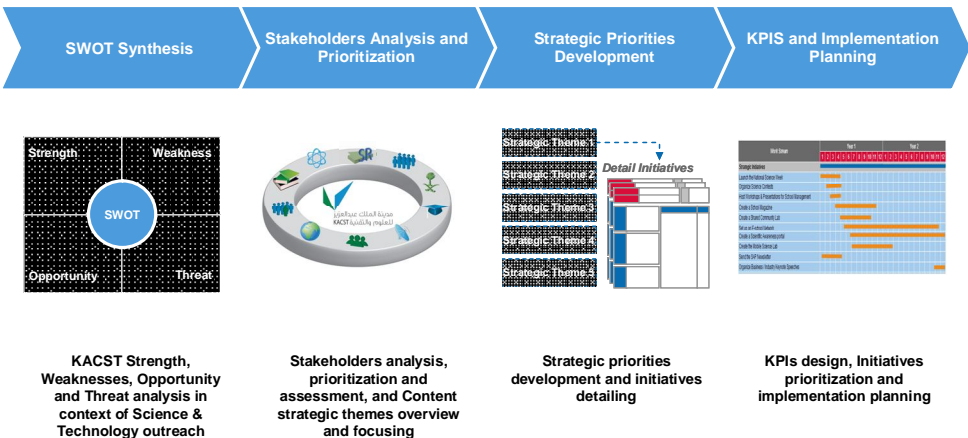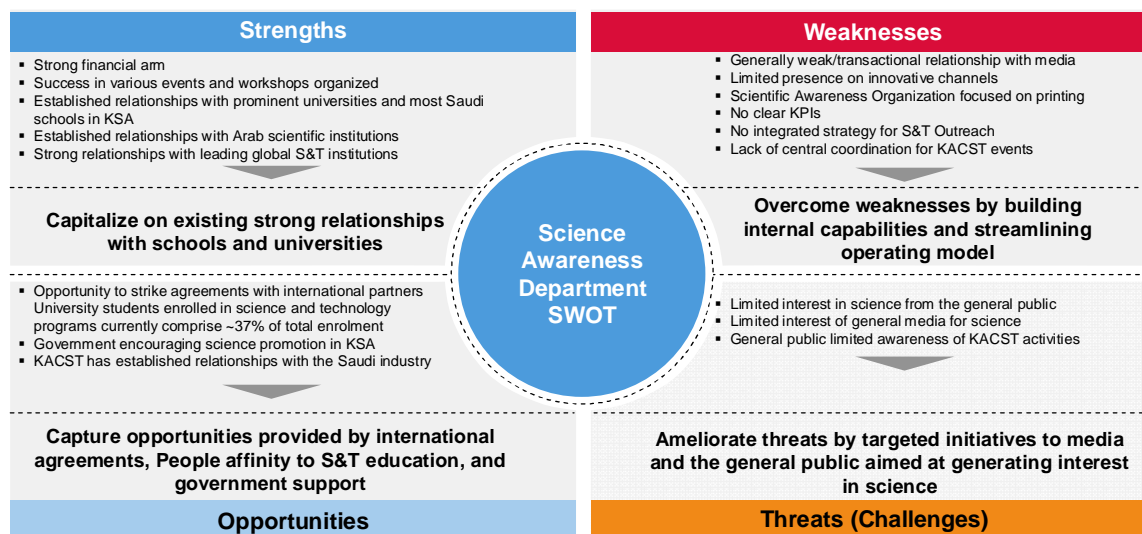**Figure 11: Strategic Priorities Development Approach**

Figure 12 below summarizes key insights derived from KACST S&T Outreach SWOT synthesis, and highlights four guiding principles for the strategy.

Figure 12: KSA/KACST S&T SWOT Analysis

Strengths	Weaknesses
- Strong financial arm - Success in various events and workshops organized - Established relationships with prominent universities and most Saudi schools in KSA - Established relationships with Arab scientific institutions - Strong relationships with leading global S&T institutions	- Generally weak/transactional relationship with media - Limited presence on innovative channels - Scientific Awareness Organization focused on printing - No clear KPIs - No integrated strategy for S&T Outreach - Lack of central coordination for KACST events
Capitalize on existing strong relationships with schools and universities	**Overcome weaknesses by building internal capabilities and streamlining operating model**
- Opportunity to strike agreements with international partners University students enrolled in science and technology programs currently comprise ~37% of total enrolment - Government encouraging science promotion in KSA - KACST has established relationships with the Saudi industry	- Limited interest in science from the general public - Limited interest of general media for science - General public limited awareness of KACST activities
Capture opportunities provided by international agreements, People affinity to S&T education, and government support	**Ameliorate threats by targeted initiatives to media and the general public aimed at generating interest in science**
Opportunities	Threats (Challenges)

Science Awareness Department SWOT

Ten stakeholders are identified as segments for S&T Outreach in KSA (Figure 13).

Figure 13: Stakeholders Analysis
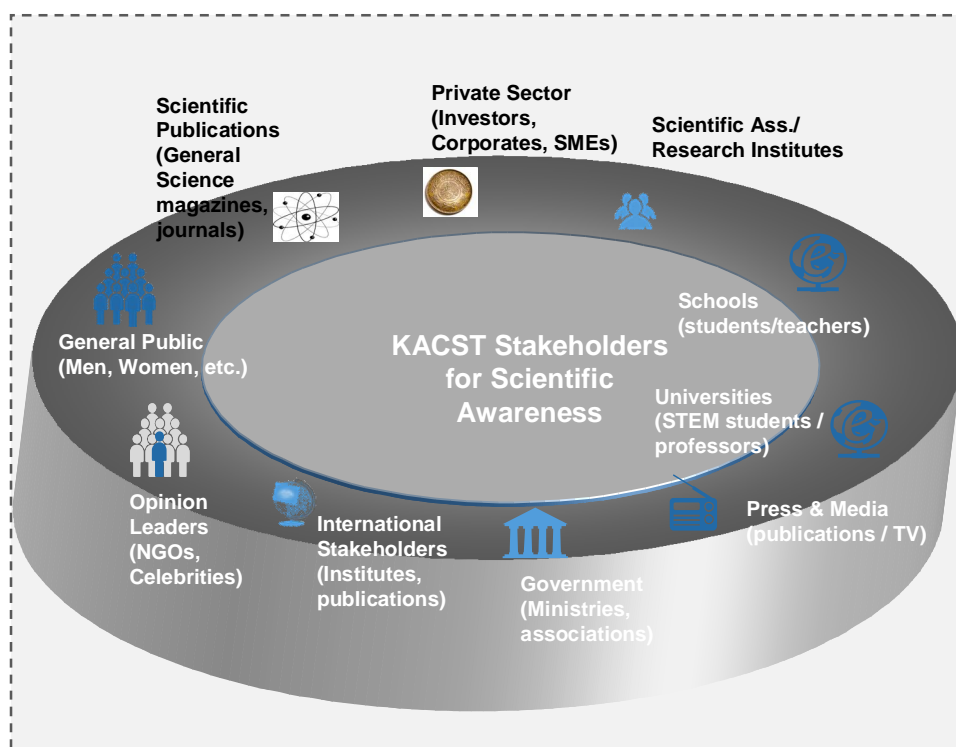
To focus the KACST S&T Outreach strategy, key stakeholders were assessed and then strategically prioritized according to five main criteria:

1. Reach: Stakeholder is not limited to a specific geography or socio-economic group but consists of a **diversity of geographic and socio-economic backgrounds**
2. Impact: Targeting this stakeholder will create strong impact across KSA, taking into account both stakeholder's **population size** and **influence within KSA society**
3. Influence in Knowledge Dissemination: Stakeholder is a **prominent disseminator of knowledge** and **thought leadership** as well as **opinion formulation**. KACST support of this stakeholder will further scientific knowledge promotion within KSA
4. Accessibility: Target group can be easily accessed via **structured communication channels** and is not fragmented
5. KACST Strategic Strength: Stakeholder has a need for **KACST core, strategic knowledge base** and strengths in research and development

The stakeholders' assessment in KSA highlighted 3 critical segments for KACST's highest focus: schools, universities and general public, but also outlined and defined stakeholders which KACST must maintain reach with . Figure 14 summarizes the stakeholders analysis performed.

Figure 14: KACST Key Stakeholders
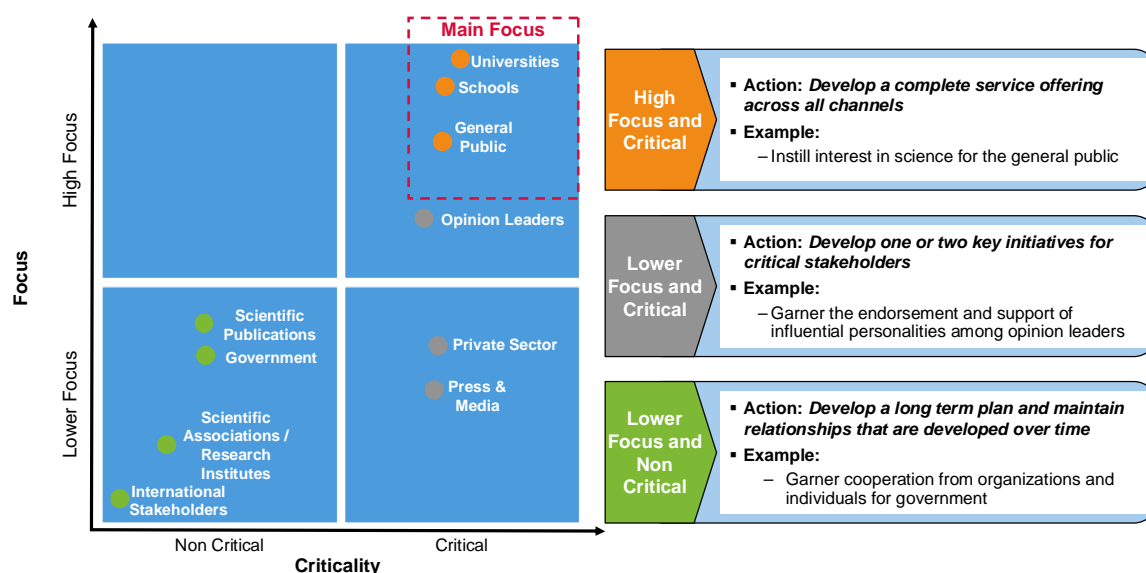
Based upon the outcomes of the SWOT analysis and the stakeholder selections process and in order for KACST to become a portal for the promotion of S&T within society key themes were developed as the foundations of the KACST S&T outreach strategy. , These five strategic themes are:

1. **Promote and enhance STEM education in KSA schools**: Promote and enhance science, technology, engineering and mathematics (STEM) education in KSA schools to increase science interest and attractiveness to students

2. **Encourage and develop research at KSA universities:** Capitalize on existing relationships with KSA universities to encourage, develop and promote scientific research with students, faculty and researchers
3. **Enhance General Public Knowledge of Applied Science & Technology & its Benefits:** Focus on portraying to the general public the application of science to everyday lives and the benefits of technology
4. **Build Strategic Linkages & Initiatives with Key Stakeholders**: Increase collaboration in the field of S&T with key stakeholders such as KSA opinion leaders, major private sector employers, and press & media, to further promote scientific awareness via critical initiatives
5. **Build Internal KACST S&T Outreach Operating Model Capability:** Build and develop the internal KACST capabilities and know-how responsible for S&T outreach and streamline the operating model efficiency to ensure KSA has a leading institution in this regards

The themes will enable KACST to fill gaps and achieve its target positioning. Each themes include a set of initiatives that directly address issues and future requirements of KACST through a set of clear solutions

# 4   Strategic Themes Initiatives Development

To ensure practical implementation of the strategy, each strategic theme is detailed into underlying initiatives in an opportunity catalogue. These initiatives were then prioritized, and scheduled into a transformation master plan to ensure feasibility.

Initiatives for each themes were prioritized based on four selection criteria:

1. High Impact/High Visibility: KACST should initially focus on initiatives that are expected to produce a **significant impact** and have **prominent visibility**
2. Complexity: **Quick wins** are given initial priority over complex initiatives. This enables KACST to **build up expertise over time** and generate initial "buzz"
3. Implementation Timeline: This criteria rewards initiatives with **lower implementation times** that enable KACST to implement them quickly
4. High Risk and High Budget: Initiatives with **high risk** and **high budget** requirements should initially be filtered out so that KACST **focuses on activities that maximize diversity** of scientific awareness offerings within set annual budget

The first strategic theme, *"Promote & Enhance STEM Education at Schools in KSA"*, involves promoting STEM education at KSA schools by developing a 3-tiered strategy. It highlight the importance of preparing future generations of students in embracing technology and being comfortable in the field of science, engineering and mathematics. This is a long term strategic goal for KSA in line with the National Science and Technology Policy. Target stakeholders involves the population of Saudi schools (children between the ages of 5 and 19 years) encompassing ~10 million students in the Kingdom (34% of total population), in addition to teachers, and parents.

**Figure 15: Strategic Theme 1 - Stem Education at School**
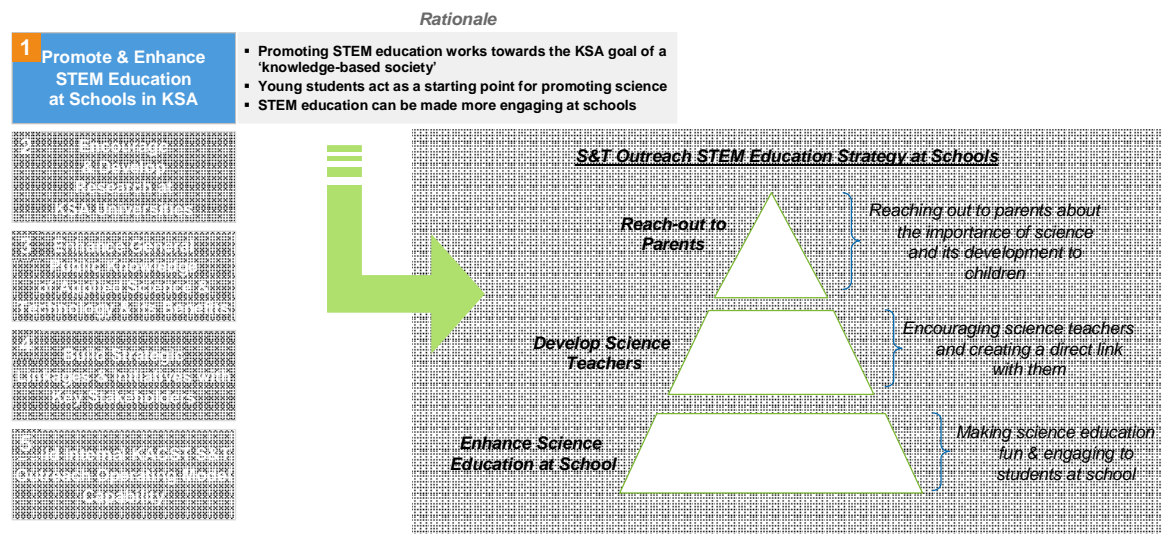
The opportunity catalogue identified 25 potential initiatives for KACST associated with promoting STEM education at schools. Further analysis revealed that KACST should focus on twelve initiatives to promote STEM education at schools. Within these, eight initiatives were singled out for immediate focus, as illustrated in figure 16.

Figure 16: Theme 1 - Priority Initiatives
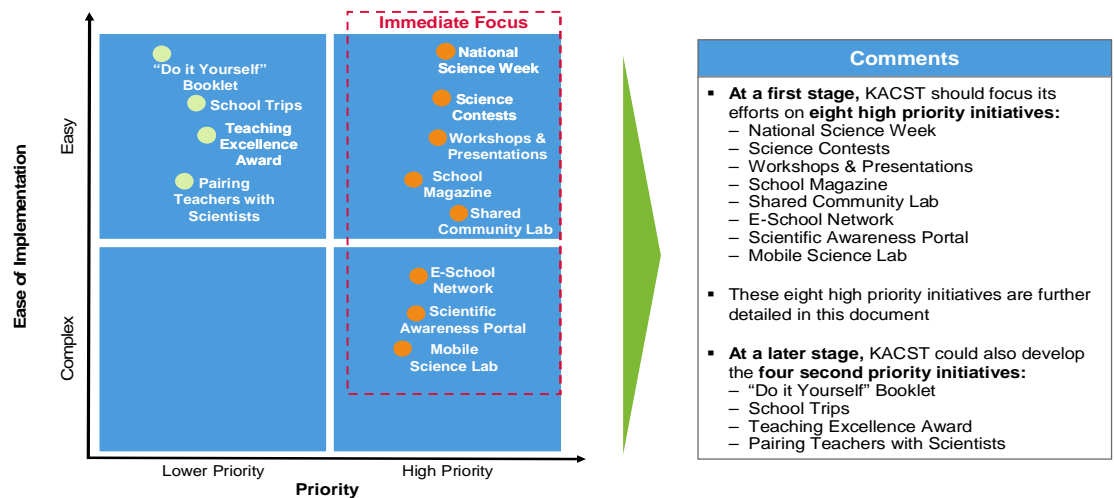
The second theme, "*Encourage & Develop Research at KSA Universities*", is focused on enabling research at universities. It plays on KACST strengths and works towards a knowledge-based society. By doing so, KACST reaches out to a significant portion of the KSA scientific community (614 thousand students and 42 thousand university instructors), influencing scientific awareness and its progress. Figure 17 shows the rationale behind the selection of this strategic initiative. Research development activities at universities include initiatives targeted to S&T faculties, S&T students and university leadership. Initially KACST can target universities in Riyadh, Madinah and Makkah representing 58% of university students in KSA.

Figure 17: Strategic Theme 2 - Encouraging & Developing Research at Universities
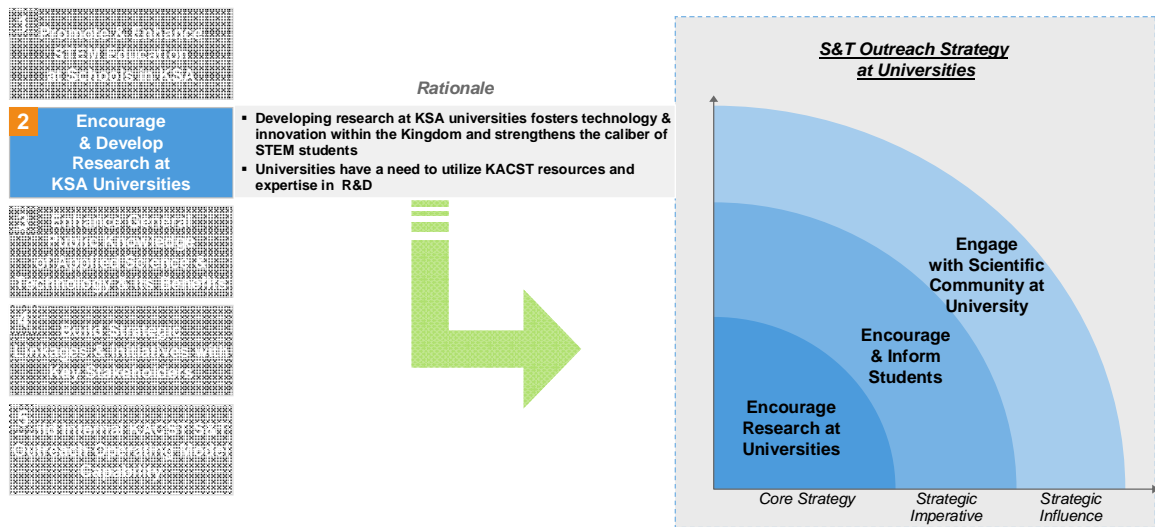

The opportunity catalogue for this theme is comprised of 20 initiatives which were then prioritized into twelve initiatives aimed at bolstering both research at universities and engagement with the scientific community. Out of the twelve, seven initiatives should be given immediate focus; many of them comprising quick wins.

Figure 18: Theme 2 - Priority Initiatives
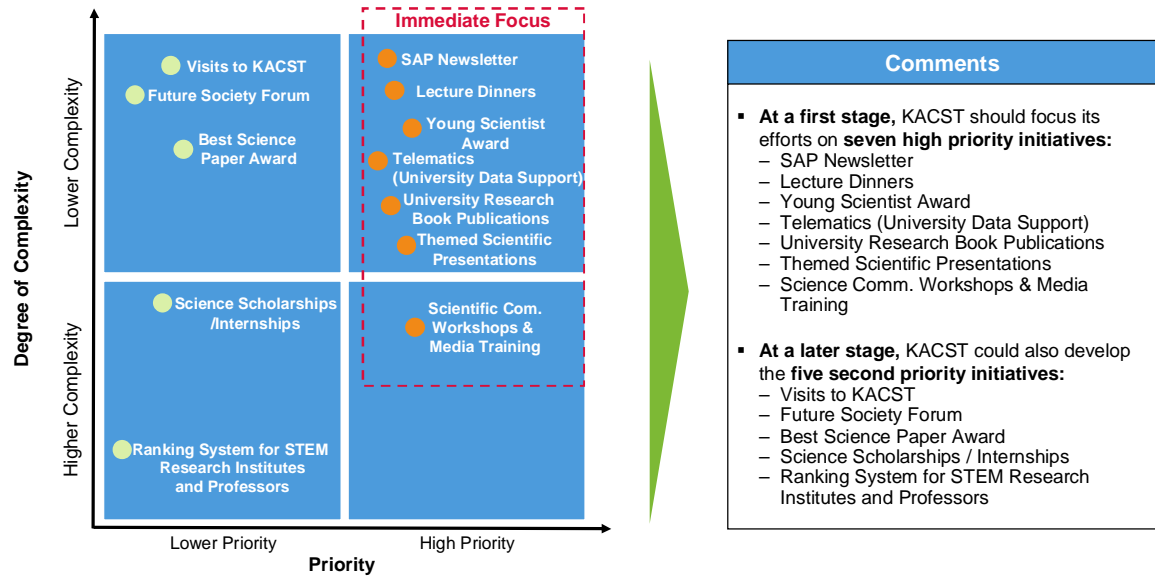
The third strategic theme, "***Enhance General Public Knowledge of Applied Science & Technology & its Benefits***", is aimed at the general public's knowledge and perception of S&T via providing a greater grasp of applied science and is based on three strategic levers (Figure 19). The underlying rational for this theme stems from the analysis highlighting the general public limited perception of benefits of science and technology and the need for Arabic scientific content communicated in a practical applied manner. Focusing on applied science and technology is more engaging to general public and acts as a doorway to interest in more advanced science shows the rationale for selecting the third theme.

Figure 19: Strategic Theme 3 - S&T Outreach to the General Public
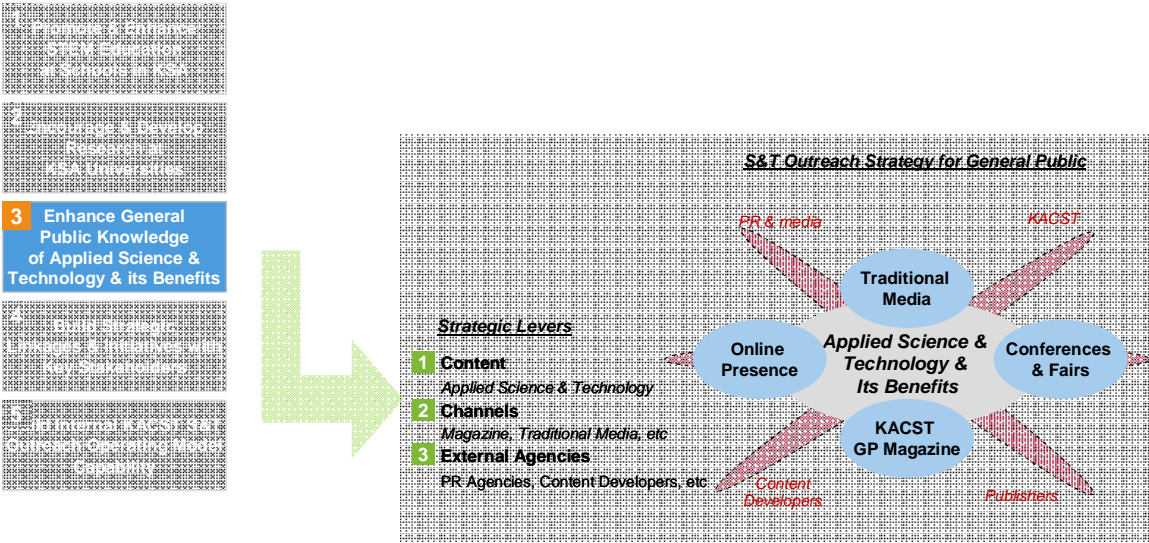
In order to ensure engagement of the general public, utilization of external expertise is required to maximize initiative exposure & quality content. These include professional creative agencies, PR agencies, publishing houses, web/content developers, etc. Content created will then need to be paired with the appropriate communication channels; either traditional media or new innovative communication channels. The opportunity catalogue for promoting S&T outreach to the general public identifies 27 initiatives. Prioritization of the catalogued initiatives identified twelve creative and engaging initiatives which will enhance the General Public knowledge of applied science and technology. Out of the twelve initiatives, ten are with priority focus. The ten initiatives are shown in figure 20.

Figure 20: Strategic Theme 3 - Priority Initiatives
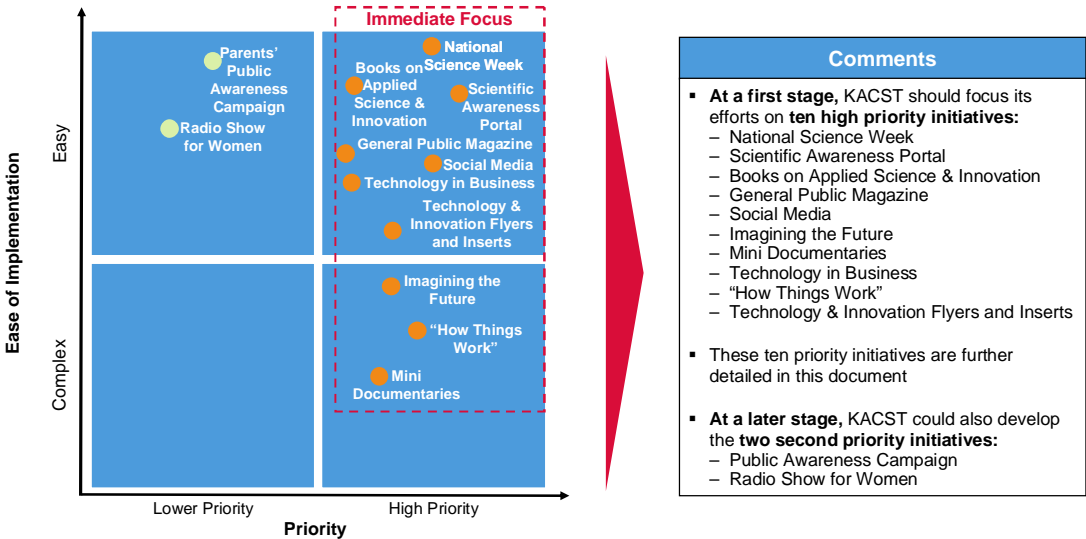
The fourth strategic theme, "***Build Strategic Linkages & Initiatives with Key Stakeholders***", focuses on maintaining critical linkages between KACST and key audiences. Some initiatives within key stakeholders are critical to promoting scientific

awareness as such maintaining direct links and open channels of communication with opinion leaders, industry and the press and media will facilitate promoting S&T outreach and make it more successful

Figure 21 : Strategic Theme 4 - Critical Linkages with Stakeholders
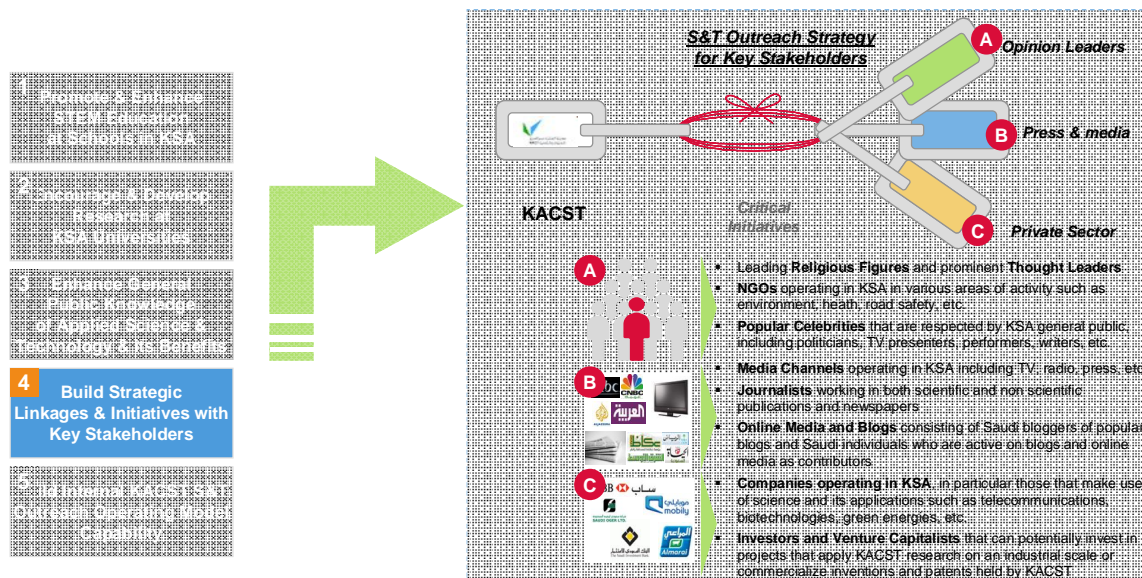
Initiatives mainly revolve around three stakeholders: press and media, private sector and opinion leaders:

- Opinion leaders mainly include:
  – Leading **Religious Figures** and prominent **Thought Leaders**, etc
  – **NGOs** operating in KSA in various areas of activity such as environment, heath, road safety, etc.
  – **Popular Celebrities** that are respected by KSA general public, including politicians, TV presenters, performers, writers, etc.
- Press & Media mainly include:
  – **Media Channels** operating in KSA including TV, radio, press, etc.
  – **Journalists** working in both scientific and non scientific publications and newspapers
  – **Online Media and Blogs** consisting of Saudi bloggers of popular blogs and Saudi individuals who are active on blogs and online media as contributors
- The private sector include:
  – **Companies operating in KSA**, in particular those that make use of science and its applications such as telecommunications, biotechnologies, green energies, etc.
  – **Investors and Venture Capitalists** that can potentially invest in projects that apply KACST research on an industrial scale or commercialize inventions and patents held by KACST

Prominent within this theme are Opinion Leaders; many of which are influential in knowledge dissemination and opinion formation within KSA society, these range from

celebrity football players to religious leaders. Two approaches to handing this stakeholder group have been outlined :

- **Direct approach** includes opinion leaders in KACST events with the aim of promoting science within the KSA community
- **Indirect approach** builds rapport with opinion leader via individual involvement with KACST; informing him/her of KACST initiatives, recognizing his/her role within KSA thought leadership, inviting him/her to select visits, etc

Initially, 38 initiatives were identified for the opportunity catalogue, these were then filtered down to twelve selected initiatives addressing key stakeholders. KACST should initially focus on five of the twelve initiatives, which are shown in figure 22. These initiatives are designed to maintain a balanced relationship with key KACST stakeholders.

Figure 22: Strategic Theme 4 - Priority Initiatives
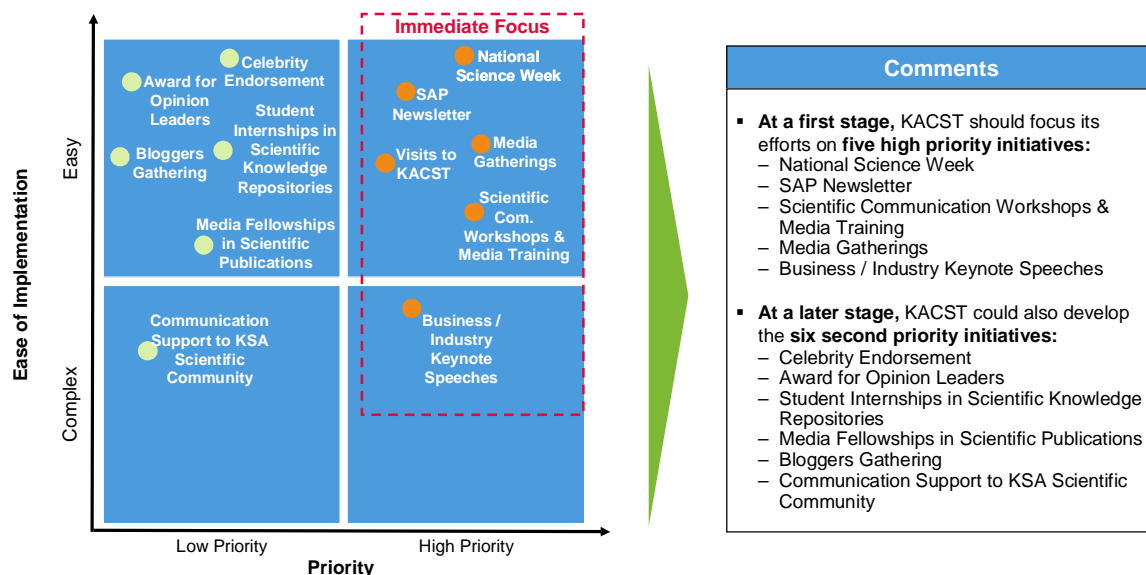
The fifth strategic theme, "**Build Internal KACST S&T Outreach Operating Model Capability**", focuses on aligning KACST internal capabilities with the developed S&T Outreach strategy. A new more streamlined organization is developed, manpower needed to implement the strategy is defined and key performance indicators set. Figure 23 highlights the key elements for this theme.

Figure 23: Strategic Theme 5 - Other Stakeholders Critical Initiatives
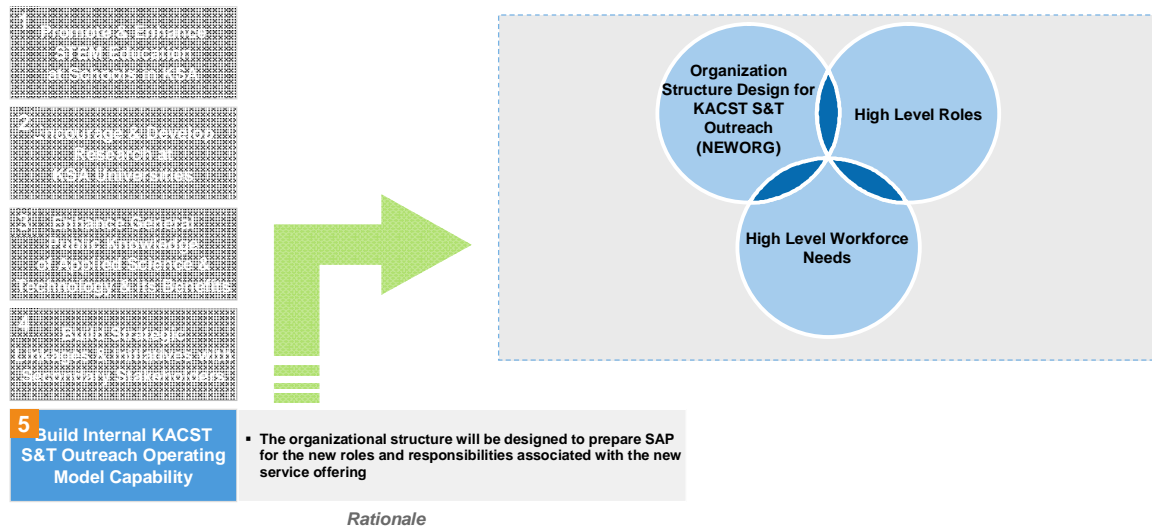
A new organization structure responsible for S&T outreach within KACST is designed with the aim of increasing accountability, enabling the ability to track performance, manage department workloads and leverage cross-functional expertise.

The new KACST S&T Outreach Department is to be organized around five main units in addition to a project management layer, particularly important at initial stages to help launch strategy execution. The new structure is shown in Figure 24.

Figure 24: KACST NEW S&T Outreach Department Units
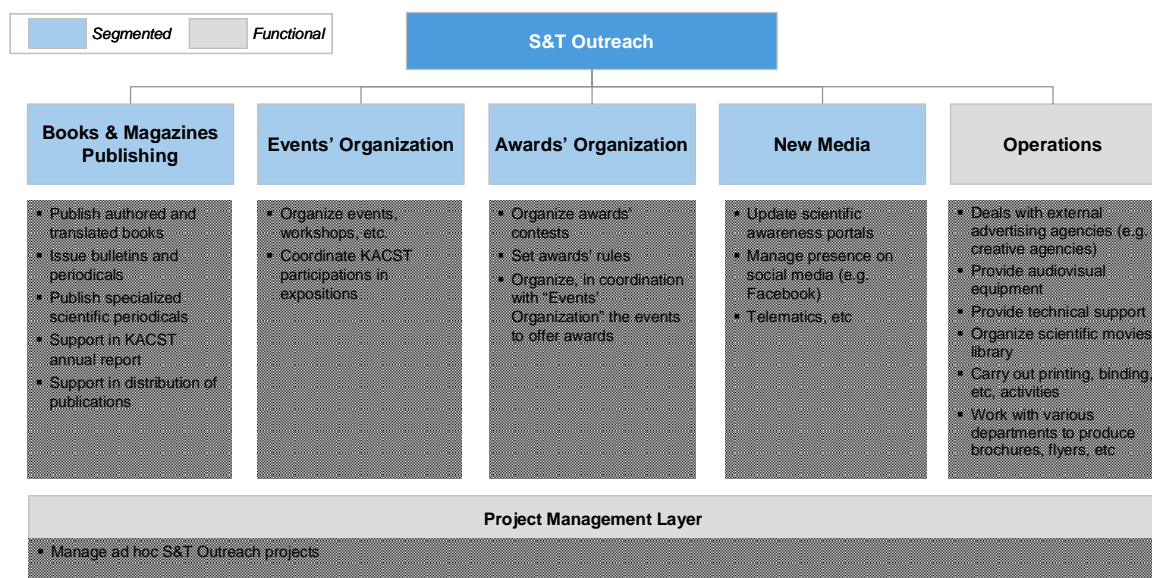
High level manpower analysis indicates a need for ~14 project managers and 24 admin. personnel to work on set initiatives. The department will require 38 Project managers and Admin. Personnel, these can be built up as initiatives are implemented over time.

5 KPIs and Implementation Planning

Key performance indicators (KPIs) are designed to focus on measuring both micro objectives at initiatives level as well as long term implications of the S&T outreach strategy at a national level. Micro indicators will directly measure KACST performance in S&T outreach initiatives. Performance can be annually tracked and directly linked to employee performance. Two types of micro KPIs are defined. These include quantitative measures, as well as qualitative measures related to associated feedback. A standard questionnaire used for S&T outreach initiatives should be developed and used across activities. Figure 25 illustrates some of the micro KPIs defined.

Figure 25: Key Performance Indicators – Sample Micro Indicators

NON-EXHAUSTIVE KPI	Current Value/Rank	2015 Target Value/Rank	2025 Target Value/Rank	KPI	Current Value/Rank	2015 Target Value/Rank	2025 Target Value/Rank
Social Media: Number of "Like's" of KACST Page[2]	7	5,000	200,000	Young Scientist Award: Number of Colleges Participating[5]	N/A	50%	80%
School Magazine: Number of Schools Covered[3]	N/A	6500	19,500	General Public Magazine: Number of Feedbacks Collected per Month[6]	N/A	5%	10%
Scientific Awareness Portal: Number of Visits per Month[4]	N/A	100,000	200,000	Media Gatherings: Number of Media Covered[7]	N/A	30%	75%

Macro indicators Indirectly measure the overall national, performance of KSA in S&T-related fields. They track performance over long periods to measure efficacy, and are typically developed by global institutions (WEF, Thomson Reuters, etc). KACST can focus on individual pillars to improve specific rankings.

- Education related KPIs: KPI's related to measuring and ranking education within KSA
- Research & technology related KPIs: KPI's related to assessing research output and technology within KSA
- Infrastructure and S&T enabled: KPI's measuring the relative infrastructure for S&T on the kingdom

Figure 26 illustrates some of the micro KPIs defined.

Figure 26: Key Performance Indicators – Sample Macro Indicators

KPI	Current Value/Rank	2015 Target Value/Rank	2025 Target Value/Rank	KPI	Current Value/Rank	2015 Target Value/Rank	2025 Target Value/Rank
Education: Quality of Education System	41st	20-27[2]	15[3]	Internet Users	58th	44th	15
Secondary Education Enrollment Rate	43[3a]	20-25	10[3b]	Internet Bandwidth	61[7]	30-37[7a]	15
Tertiary Education Enrolment Rate	75th	40-45[4]	10[4]	Property Rights	28th	23rd	12
R&D: Availability of Scientists and Engineers	34th	20-25[5a]	15[5b]	Intellectual Property Protection	30th	24th	12
R&D: KSA Share of Global Research Output	0.17%	0.67%[6]	1.7%	Availability of Latest Technology	39th	31st	15
Infrastructure & S&T Enablers: Availability of Research and Training Services	34th	26th	12	Firm Level Technology Absorption	26th	19th	15

Finally, an implementation road map was developed to transition KACST Scientific Awareness and Publishing department towards its final organization, and a preliminary 2 year implementation plan has been developed for both strategic and organizational initiatives (Figure 27).

Figure 27: Overall Implementation Plan (Non-Exhaustive)

Work Stream	Year 1												Year 2											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Strategic Initiatives																								
Launch the National Science Week																								
Organize Science Contests																								
Host Workshops & Presentations for School Management																								
Create a School Magazine																								
Create a Shared Community Lab																								
Set up an E-school Network																								
Create a Scientific Awareness portal																								
Create the Mobile Science Lab																								
Send the SAP Newsletter																								
Organize Business / Industry Keynote Speeches																								
Produce Mini Documentaries																								
Organize Lecture Dinners																								
Offer the Young Scientist Award																								
Provide Telematics (University Data Support)																								
Ensure University Research Book Publications																								
Organize Themed Scientific Presentations																								
Organize Scientific Comm. Workshops and Media Training																								
Publish Books on Applied Science and Innovation																								