

# An Innovation driven Economic Diversification Strategy for Kuwait

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## 1. Preface

This report, commissioned by Marmore, a fully owned company by Kuwait Financial Centre, 'Markaz', presents an analytical platform informing and advising policy makers, the business community and research society of Kuwait on how an innovation driven economic diversification policy can be conceived, designed and implemented in Kuwait to enable the country's transition to a more knowledge based economy. The study is based partly on desk research of written material mainly provided by Marmore, and partly on interviews with a number of stakeholders in the public and private sectors during my short stay in Kuwait in May this year. I would like to extend my deepest gratitude to Sh. Humoud Salah Al-Sabah, who facilitated the stakeholder interviews, accompanied me to most of the interviews, and was a rich and knowledgeable source of local information, but who also provided a very generous hospitality, which made my stay in Kuwait not only interesting but also very pleasant. Many thanks also to Mr. Jampala Sudhakaran, who came with me to the interviews the last couple of days, and to the rest of the Marmore administration that was very helpful assisting me during my stay. Special thanks go to the persons I interviewed, who willingly allocated their time to sharing their great knowledge of various aspects of the Kuwait economy and society with me. I am very grateful for their participation as without their provision of contextualized knowledge and information, which cannot be achieved only through written sources but has to be acquired face-to-face at the location, it would not have been possible to carry out this work. It is my sincere hope that this report will at least give some preliminary answers to how the challenges of a successful, innovation driven diversification of the Kuwait economy can be handled.

Barcelona, July 15th 2015

Bjørn T. Asheim

## 2. Executive summary

This report presents an analytical platform informing and advising policy makers, the business community and research society of Kuwait on how an innovation driven economic diversification policy can be conceived, designed and implemented in Kuwait to enable the country's transition to a more knowledge based economy. The report consists of four parts; after an introduction identifying the problems and challenges of the Kuwait economy, the second part presents the analytical framework of how an innovation driven economic diversification can be achieved. The third part, based on the analytical platform of part two, presents the recommendation of how to design and implement such an innovation driven diversification strategy. The report is concluded with a short final statement.

The current trajectory of the Kuwait economy does not represent a sustainable future, even with a very high accumulated national wealth, which can sustain the current use of capital for another 20-40 years. This has been accentuated by the dramatic fall in oil prices by around 50% to a level of less than 60 dollars per barrel. Kuwait today needs an oil price of around 50 dollars per barrel to balance the 2015 budget (the fiscal break-even price). Given that the future prospects of the price being back on the previous level looking bleak in a short and medium time perspective, combined with scenarios of rapidly increasing public sector expenditures due to increased demand from a growing number of young (education) and old (health care) people of the population, underline the lack of sustainability in the current situation. As introducing general taxes seem not to be a realistic alternative, and the same goes for restricting the future offer of public welfare services, the remaining alternative is to boost the value creation capacity of the economy beyond the oil and gas economy, i.e. to diversify the economy into a more knowledge based and global competitive economy, in which entrepreneurship and innovation represent the key mechanism for a successful transformation.

### ***An innovation driven diversification strategy***

Internationally, there is a strong agreement that innovation is the key factor in promoting economic diversification and increased competitiveness in a globalising knowledge economy. Competition based on innovation implies choosing the high road strategy, which is the only sustainable alternative for developed, high-cost regional and national economies as well as for the future of developing economies. For a long time such a strategy was thought of as being identical with promoting high-tech, R&D intensive industries in accordance with the linear view of innovation. More and more the recognition has evolved that a broader and more comprehensive view on innovation has to be applied to retain and develop competitiveness in the heterogeneity of countries and regions, i.e. that all drivers of innovation have to be integrated into an overall approach to innovation policy. This requires a differentiated knowledge based approach, distinguishing between analytical, synthetic and symbolic knowledge to be fully accommodated. Such a broad based innovation policy is in line with the innovation system approach of defining innovation as interactive learning combining a R&D and an experience based.

Innovation capacity, thus, constitutes the most important strategic element of the competitiveness of companies and countries, and represents a dynamic view on competition. A dynamic view on competition implies that the innovation capacity of a country, and consequently its competitiveness, can be promoted by national research and innovation policies prioritizing increased investments in education, research, new technology and an improved collaboration between key stakeholders in the society (public sector, industry, universities and civil society) as well as by strategic decisions of companies to base their competitiveness on innovation.

A traditional distinction can be drawn between cost saving and value creating innovations. The most important type of cost saving innovations is process innovations, which have represented the backbone of the impressive productivity growth in the Western world in the last two centuries, while the most important value creating or increasing innovations are product innovations, and the more radical they are, the greater is the potential. However, also market related innovations are becoming gradually more important as vehicles for increased value creation. Productivity gains as a result of process innovations of course also

results in value creation, however, in a longer time perspective value creation through product innovations is needed to avoid ending up in price competition, and, thus, in a 'low road strategy' position. Process innovations represent only temporary improved competitive advantages as they run the risk of being quickly copied and imitated by competitors, and thereby only postpone price competition. Unique product and services through a strategy of product differentiation have the capacity of producing a larger amount of value creation for a longer period of time for firms and societies, and by this represent a more sustainable 'high road strategy' for an economy. New product and market related innovations are, therefore, to be considered as 'fundamental' for a sustainable 'high road strategy' in a long time perspective. This is a great challenge for resource based economies such as Kuwait to be able to create sustainable, innovation based competitive advantage, as process innovations traditionally have been the key mechanism in securing an efficient exploitation of the oil resources.

Smart Specialisation (SS) is probably the single largest attempt ever of an orchestrated, supranational innovation strategy to boost economic growth through diversification, and, as such, deserves to be watched closely by other countries aiming for the same goals. It is launched by the EU and is a strategic approach to an innovation based policy for national and regional economic development. SS focuses on diversification, or diversified specialisation. What it means is that countries should identify areas - or 'domains' as the SS strategy prefers to call it - of existing and/or potential competitive advantage, where they can specialise in a diversified way compared to other countries.

When designing and implementing a SS inspired innovation strategy for industrial and economic diversification, it is necessary not only to consider how to secure 'path extension', which has been the main goal in much of traditional innovation policy, especially in countries with a resource based economy due to the importance of process innovations to secure high productivity in the exploitation of natural resources such as oil and gas. Path extension mainly results in incremental product and process innovations in existing industries and technological trajectories. While this can secure competitiveness and growth in a short and medium term perspective, in a longer time perspective these industries run the risk of path exhaustion, referring to situations where the capacity for renewal is lacking. Path renewal takes place

when existing local firms branch into different but related activities and sectors, e.g. if firms engage in new downstream activities based on their core exploitation business. Countries' industrial specialisation and firms' knowledge bases shape the types of renewal that occur in the form of sectoral branching. New path creation represents the most wide-ranging changes in a regional economy. It includes the establishment of new firms in new sectors, or firms that introduce new products, processes and/or business models in the regional economy. Path creation is most often R&D driven and can either be the result of knowledge based entrepreneurial discovery (university spin-offs through commercialization of research results) or proactive national innovation policy.

### ***How to diversify the Kuwait economy***

The report demonstrates that all these strategies for economic diversification are valid for Kuwait. Path extension or positive lock-in will always be the most important perspective for upstream exploitation activities, i.e. securing optimal efficiency and productivity for the oil production. Downstream have more potential for path renewal through an increased emphasis on petrochemicals and other higher value products. In this context it is important to try to identify niche markets, where the scale of production is not the critical factor, in order to be able to base the production on a product differentiation strategy to avoid a cost based competition.

Another way of diversifying downstream in related activities is to manufacture production equipment for the oil and gas industry. This is one of the success stories of the Norwegian oil and gas industry, exploiting the offshore exploitation experience to become the world leading producer of deep sea drilling and exploitation equipment for oil and gas production. Kuwait could in a similar way exploit its specific physical geographical conditions to secure a global leading position for production equipment for the industry.

Outside the oil and gas sector there is huge potential for economic diversification in renewable energy, particularly solar energy, both with respect to energy production and supply locally and regionally but also regarding manufacturing of production equipment, e.g. storing capacity. The geographical location is optimal and there is a large regional market for such production. The same is the case for water resource technology both for desalination and for



water use efficiency. In addition to the large regional market, there is also a growing global market, e.g. manifested in the large draught problems in California.

With respect to diversification based on more basic research oriented activities such as life science (or health and medicine), these should be demand driven producing drugs for diseases which are growing in Kuwait and in the larger Arab and North African region. Examples of such diseases are diabetes and obesity, which are rapidly developing into serious chronic diseases in the region. It would probably represent a smart use of money to stay as close to the exploitation phase (i.e. after testing and examination) as possible, where a combination of analytical (basic research) and synthetic (applied research) is instrumental, and where proximity to the end users could be a strategic advantage.

Another potentiality for economic diversification is the bank and financial sector, which next to the oil and gas industry has been one of the more successful and also one of the innovative sectors in Kuwait. Finally Kuwait also has creative sectors which could be upgraded drawing on the symbolic knowledge base. Kuwait is the only country in the Gulf with a theatrical tradition, their soap operas are among the most watched in the GCC countries, and it has also the oldest modern art movement in the Arab world. Here lies large opportunities for an expanding market commercialization, which especially would be achievable for entrepreneurs and small firms, as the threshold with respect to capital and competence probably is lower in these sectors. In addition, in these sectors it is also easier to exploit ICT and social media to come up with and market new products and services, not only for the Kuwait market but also for the whole Arab world. It is, thus, interesting to see that the newly established Kuwait national fund for SME development as one of its prioritized areas has pointed at creative industries mentioning media (as referred to above) and also design. These sectors are very relevant for SMEs and new firm formation, and, thus, can play an important role in realizing the high national ambitions for economic diversification through SME development. Thus, Kuwait could easily follow a smart specialization strategy of an innovation driven diversification of its economy to become more knowledge-based and competitive.

Despite estimated massive fiscal reserves of about \$550 billion, the fast pace of developments in the oil industry will have its ramifications for Kuwait's strategic orientation with respect to

the budget. Thus, when addressing reform policies some quick wins could be identified in order to increase the diversification momentum which includes but not limited to:

- Private sector to take the lead in economic development: In order for national development to proceed irrespective of changes in oil prices, the private sector in Kuwait will have to mature enough to be able to contribute to projects' financing on its own. The privatization law will have to be enforced more strongly in order to increase the participation of the private sector. Educational and labour reforms are essential in order to pave the way for more nationals to successfully steer the nation's private sector.
- Rationalization of spending and subsidies: Kuwait has to find ways to rationalize its subsidies programme through smart measures. Subsidies that target people who need them and tiered subsidization with respect to utilities would support the government's plan to drive cost savings and promote efficiency.
- A 'look east' policy: With the U.S. awash in shale and Europe going through a highly uncertain recovery, Kuwait will have to strengthen its 'look east' policy in terms of expanding its crude market share across Asian countries like China and India. Already, there are signs that such a policy is being followed. For instance, in 2014, Kuwait exported 10.62 million tons (or 213,000 barrels per day) of crude to China, an increase of approximately 14% over the previous year. But exports to South Korea fell 2.3% in 2014 to 374,000 barrels per day. Such variances should be minimized and Asia should become a centre of focus for more crude exports in order to develop market share and to increase revenues, which can in turn fund economic diversification efforts.

### **Recommendations for policy design and implementation - the six Cs**

The six pillars of recommendations are formulated around six Cs, Concentration, Connectivity, Cooperation, Capital, Competence, and Coordination. The strategy outlined in the six Cs is framed within and informed by the theoretical sections on innovation as a high road strategy and smart specialization as an innovation based policy to secure economic diversification through product differentiation; i.e. to create unique products and services as the way to build innovation based competitiveness as a sustainable high road strategy.

Concentration, understood as having a strong focus in the policy design of prioritizing, targeting and carry out strategic decision making, must have a core role in an innovation based policy for economic restructuring. Specifically as a smart specialization strategy is concerned with diversified specialization, meaning that countries should specialise in sectors where they either have competitive advantages and/or where they have the necessary competences and resources to develop such advantages in the future, and that this should be done in such a way that the new specialisations are different or diversified relative to competing countries.

In Kuwait the recognition of the importance of 'concentration' is in place and appears in the strategies of different private and public organisations, such as KISR (Kuwait Institute for Scientific Research), KU (Kuwait University), KFAS (Kuwait Foundation for the Advancement of Sciences), and the Kuwait National Fund for SMEs Development, which represent important agencies in designing and implementing exploration and exploitation strategies for the promotion of a knowledge based diversified economy.

The strategies of the organisations mentioned above are very much influenced by the priorities and recommendations of the report of the Kuwait Research Review Panel, published in 2007. The strategic plans of the above organisations cover most of these areas as their prioritized areas of R&D activity. All in all, in the strategic plans of these organisations one finds a high level of concentration to areas and sectors that seem well suited for a smart specialization strategy. However, the concentrated efforts of various Kuwaiti agencies and organisations have too one dimensionally been focusing on strengthening the R&D capacity, i.e. the exploration side, which is very well motivated given the low level of R&D investments, while few efforts seem to have been concentrated on a similar strengthening of the innovation capacity, i.e. the exploitation side. A broader innovation policy will make it more feasible to identify in which areas of each of the prioritized sectors it will be realistic to achieve a successful diversified specialization.

It is documented in the report that many of the important elements of an innovation system are in place in Kuwait but that the linking or connectivity between the elements of the system often seems to be too weak. To improve this requires partly the introduction of an integrated and coherent STI policy and partly the formation of a national innovation system, which is

precisely what the Kuwait research review panel recommended already back in 2007. The view that an improved connectivity between the most important STI stakeholders, the government, universities and industry (the 'Triple Helix'), would strengthen the innovativeness and competitiveness of a country, which, thus, can be promoted by a pro-active innovation policy, is the bearing idea behind the 'innovation system approach'.

The strategic role played by cooperation in a knowledge economy is underlined by the understanding of interactive learning as a fundamental aspect of the process of innovation, which implies that efficient cooperation results in an increased innovation capacity of firms and countries. Thus, the formation of a national innovation system will have the potential of improving the connectivity between the strategic STI actors which will enable and facilitate a closer and more efficient cooperation between the stakeholders of the system resulting in an increased innovation capacity. This will be instrumental in securing a diversification of the economy and transforming Kuwait into a more knowledge based economy.

Capital is definitely not a problem in Kuwait. With one of the largest public sovereign funds in the world, The Kuwait Investment Authority (KIA), several large private investment funds, etc., capital is not a scarcity. On this background the relative modest investments in R&D and higher education might look as a paradox. Public funding is of strategic importance especially for funding basic, curiosity driven and targeted, research as it can provide the necessary level of funding, it can be patient and be more risk taking than private capital, all factors which are important for strengthening the R&D capacity of the country. However, in making such necessary, large investments, a balanced view between exploration and exploitation should be highlighted through a trade-off between investments in long cycle (basic research on science) vs. short cycle (applied research on technology) activities.

Competence is the single most important factor to promote innovation. The level of absorptive capacity of individuals is of significant importance for firms and society to differentiate and upgrade their economic activities to become more knowledge intensive. Absorptive capacity is enlarged through higher levels of human capital (i.e. more and better education and training) as well as by larger investments in R&D by firms and societies. Firms need higher absorptive capacity to search for, access, and exploit external knowledge and to combine and integrate it with internal knowledge generated through firms' own R&D activity. Thus,

increased investments in research, education, training and competence building are of strategic importance to succeed in diversifying Kuwait's economy into a knowledge based economy. In this context the relatively low level of funding of higher education and especially R&D may seem a bit surprising given Kuwait's access of capital. Already in 2007 the Report of the Kuwait research Panel recommended that over the course of the next ten years the R&D investments should raise close to 2% of GDP, something which eight years later still is far from being achieved.

Finally turning to the need of an improved coordination in the Kuwait society. To reach the ambitions of diversifying Kuwait's economy into a knowledge based economy, 'institutional reforms and cultural change' need to take place. Among such reforms is to develop a more efficient, less bureaucratic and more transparent governance system and institutions, including a reformed legal framework to create more openness to improve the business climate (e.g. making it easier to start new business).

Part of the problem of the inefficient bureaucracy is due to the sheer size of the public sector as a result of the traditional policy of securing permanent, life-long employment for Kuwaitis in government. As it is extremely difficult, or probably impossible, to do anything with this in a short term perspective, a gradual process of organizational and institutional innovations aiming at a slower future growth has to be designed and implemented to make the bureaucracy leaner and more efficient. In a longer term perspective incentives in combination with further education and training should be developed to offer new job opportunities in the private sector either as entrepreneurs or employees with sought after high skills.

The report of the Kuwait Research Review Panel also recommends the establishment of a high-level 'Kuwait Science, Technology and Innovation Council' (KSTIC) to develop a National STI policy and strategy (KSTIP). It would be recommendable if such a national policy and strategy used an innovation system approach as a point of departure to secure a balance between exploration and exploitation as well as facilitating close private-public cooperation. Moreover, the establishment of an operational governmental agency, e.g. a reformed KISR using VINNOVA as an example, would also be beneficial to coordinate the STI/innovation system policy and be responsible for designing and implementing concrete innovation

strategies and policies and to enable more public-private co-funding (e.g. with KFAS) and cooperation with industry to promote innovation and economic diversification.

Arguably, an efficient knowledge economy is based on innovation systems with a high degree of openness and diversity, not only concerning knowledge strictly defined, but also with respect to tolerance towards the cultural, religious and ethnic characteristics of the carriers (e.g. entrepreneurs and researchers) of that knowledge. Thus, relaxing what the Kuwait Research Panel report calls 'the Kuwaitisation policy' to permit the recruitment of a sufficient number of internationally highly talented researchers and entrepreneurs to staff the HEIs and research institutes and to boost the private economy might in this context be very productive. It is generally accepted that successful recruitment of global talents is of strategic importance for all countries with a knowledge based economy to remain innovative and internationally competitive (Melander et al., 2013).

Kuwait is traditionally considered to be a relatively investor friendly and open economy, which is becoming increasingly important for a country's economic diversification by securing a good access to foreign knowledge and technology. In a globalized knowledge economy the importance of globally distributed knowledge networks has increased dramatically over the last decade. This is not the least important to recognize for a small and open economy as the one of Kuwait in accomplishing the goals of diversifying its economy.

### **3. Introduction: An innovation driven economic diversification strategy for Kuwait**

Kuwait is a small, affluent, oil producing Middle-East country with a population of 4.1 million of which among one third, 1.2 million, is Kuwaiti. It was the first of the Arab countries in the Middle-East to start exploiting its large oil resources in 1938. It is recognized as a high income country by the World Bank with a per capita income of 71,000 US dollars using a PPP measurement (ranked No. 5) or of 43,000 US dollars if a nominal measurement is used (43rd ranking). The Kuwaiti dinar is the highest-valued currency unit in the world. It is a constitutional monarchy (emirate) with a parliamentary system as the only one among the Arab states of the Arabian Gulf. It is what could be called an 'Arab welfare state' with life-long, guaranteed employment in the public sector with a good salary and with no tax to pay. However, Kuwait is a highly oil dependent economy. Petroleum accounts for almost 50% of GDP, 95% of export revenues, and more than 90% of government incomes. The crude oil reserves are estimated at more than 100 billion barrels, which constitutes approximately around 9% of world's reserve. Kuwait experienced a 20% increase in government budget revenues as a result of the rise in global oil prices in 2010. As far as expenditures are concerned, current expenditures dominate and reached around three times that of capital expenditures. This is basically due to a rise in the share of public sector wages, salaries and internal transfers as the government employs more than 85% of the country's indigenous workforce (see tables 1 and 2 below).

**Table 1: Official and Actual Budgets (where available), FY 2012/13 - FY 2015/16**

Budget (million KD, unless otherwise noted)	FY 2012/13		FY 2013/14		FY 2014/15	FY 2015/16*
	Official Budget	Actual	Official Budget	Actual**	Official Budget	Official Budget
Oil Price (\$/barrel)	65.0	106.6	70.0	103.4	75.0	45.0
Oil Revenues	12,768	29,970	16,883	29,300	18,800	10,500
Non-Oil Revenues	1,164	2,039	1,213	2,500	1,260	1,400
<b>Total Revenues</b>	13,932	32,009	18,096	31,800	20,060	11,900
Expenditures (official)	21,240	19,308	21,003	18,900	21,680	19,000
<b>Surplus (deficit)</b>	-7,308	12,701	-2,907	10,400	-1,620	-8,200

\*Note: The figures have been converted from billions to millions, using data reported by the Kuwait News Agency (KUNA) on 26/01/2015; \*\*-Rounded off numbers

Source: NBK and Ministry of Finance (Kuwait)



**Table 2: Actual Budget Expenditure, FY 2008/09 – FY 2014/15 (FY 2014/15 is budgeted)**

<b>Expenditures (KD million)</b>	<b>FY08/09</b>	<b>FY09/10</b>	<b>FY10/11</b>	<b>FY11/12</b>	<b>FY12/13*</b>	<b>FY13/14*</b>	<b>FY14/15*</b>
Wages & salaries (A)	3,039	3,194	3,423	4,103	4,800	5,000	5,600
Goods & services (B)	3,002	2,172	2,792	2,760	3,600	3,200	3,900
Misc & transfers (C)	10,741	4,577	8,165	8,345	9,000	8,900	10,100
<b>Current expenditure (A+B+C) = (D)</b>	<b>16,782</b>	<b>9,943</b>	<b>14,380</b>	<b>15,208</b>	<b>17,400</b>	<b>17,100</b>	<b>19,600</b>
<b>Current expenditure/Total Expenditure</b>	<b>92%</b>	<b>88%</b>	<b>89%</b>	<b>89%</b>	<b>90%</b>	<b>91%</b>	<b>90%</b>
Vehicles & equipment (E)	122	227	153	147	200	200	300
Projects, maintenance & land purchases (F)	1,358	1,081	1,688	1,652	1,700	1,500	1,800
<b>Capital expenditure (E+F) = (G)</b>	<b>1,480</b>	<b>1,308</b>	<b>1,841</b>	<b>1,799</b>	<b>1,900</b>	<b>1,700</b>	<b>2,100</b>
<b>Capital expenditure/Total Expenditure</b>	<b>8%</b>	<b>12%</b>	<b>11%</b>	<b>11%</b>	<b>10%</b>	<b>9%</b>	<b>10%</b>
<b>Total (D+G)</b>	<b>18,262</b>	<b>11,251</b>	<b>16,221</b>	<b>17,007</b>	<b>19,300</b>	<b>18,800</b>	<b>21,700</b>
<b>YoY Change %</b>	<b>88</b>	<b>-38</b>	<b>44</b>	<b>5</b>	<b>13</b>	<b>-3%</b>	<b>15%</b>

\*Note: Rounded off values.

Source: NBK and Ministry of Finance (Kuwait)

This picture does not represent a sustainable future, even with a very high accumulated national wealth, which can sustain the current use of capital for another 20-40 years. This is further accentuated in the current situation with oil prices only a bit higher than 50% of what they were in the period 2010-2013. Kuwait today needs an oil price of around 50 US dollars

per barrel to balance the 2015 budget (the fiscal break-even price), Abu Dhabi is on the same level, while Saudi Arabia needs a price of more than 100 US dollars to do the same. In contrast Norway only needs a price of 40 US dollars to fiscally break-even (Financial Times, May 2015). Even if the price now is around 60 US dollars per barrel, the future prospects of the price being back on the previous level looking bleak in a short and medium time perspective, combined with scenarios of rapidly increasing public sector expenditures due to increased demand from a growing number of young (education) and old (health care) people of the population, underline the lack of sustainability in the current situation. As introducing general taxes seem not to be a realistic alternative, and the same goes for restricting the future offer of public welfare services, the remaining alternative is to boost the value creation capacity of the economy beyond the oil and gas economy, i.e. to diversify the economy into a more knowledge based and global competitive economy, in which entrepreneurship and innovation represent the key mechanism for a successful transformation. Another example from the region of fiscal consequences of falling oil prices is the second delay to the end of 2016 of the opening of the first part of the state-owned cultural district of Saadiyat Island in Abu Dhabi (the Louvre museum), due to lower oil prices and regional turmoil, which have reshaped priorities in the country (Financial Times, July 2015). This is, thus, a challenge that Kuwait shares with many developed and emerging, especially resource based economies (such as Norway), but not only as the majority of developed OECD economies now experience a trajectory of a much lower and slower economic growth than previously. A new Kuwait Development Plan (KDP) for 2015-2020 was announced in August 2014, with a focus on economic reform and the implementation of several long-stalled mega strategic projects. The earlier iteration of the KDP is now widely considered as having run into several problems of implementation. In December 2014, the National Assembly's Financial and Economic Affairs Committee looked into the obstacles that the KDP faced during the 2010-2014 plan. A committee was formed under the Supreme Council for Planning and Development (SCPD) to investigate the matter further. The KDP 2015-2020 plan has two distinct articulated objectives: "to address the imbalances in the economic reforms through giving a free rein to the private sector to play a bigger role in development; and realize the country's strategic vision through the implementation of mega projects," (KUNA)

Some of the 2015-2020 summarized highlights are:

- 429 projects from the previous plan and 92 new projects from the current plan to be executed over the next five years
- Construction and Development of the \$3.35 Bn Metro rail project
- Developing another rail network at a cost of \$27.8 Bn which is part of the larger GCC wide rail network
- Development of the Mubarak Al Kabeer port on Boubyan Island
- Privatization of selected public schools and universities
- Increase private sector jobs for Kuwaiti nationals from 92,000 to 137,000 over the development period

The KDP 2015-2020 has vital ramifications for Kuwait's oil sector, as well. If implementation moves ahead as per the vision, then Kuwait would produce its first batch of 60,000 barrels of heavy oil a day by the year 2018, with the potential that the output can be ramped up to about up to 270,000 barrels a day by 2030. The KDP, as a concept, is part of the Kuwaiti State's targeted development plans to diversify national income sources through promotion of private sector's investments and elevation of the competitiveness of multiple sectors, including education, health, infrastructure, etc. An effective implementation of the plan will likely see many portions of current governmental activities being privatized and further stimulus attached to public-private partnerships (PPPs).

**Table 3: Snapshot of the KDP Plans (2010 - 2014 and 2015 - 2020)**

KDP 2010 - 2014	KDP 2015 - 2020
Overall budget of KD21.42bn	Overall budget of KD34.15bn
Actual spending achieved was 59% of budget	N/A
Focus more on government led infrastructure build-up	Focus more on private sector led diversification through public-private partnerships and foreign direct investment
Plagued by poor implementation due to policy paralysis and operational sluggishness	More attention geared towards projects' implementation, with many projects carrying over from the previous plan
Not infused with multidimensional metrics to monitor and track progress	Six strategic and 105 short-term goals for monitoring progress

Source: Marmore Analysis

Along with other GCC states, Kuwait has embarked on an ambitious policy of diversifying its economy away from oil exports, and has seen a rise in entrepreneurship and small business start-ups, e.g. in ICT using a social media Instagram business model. Even if this rise looks promising relatively speaking, in absolute terms the growth is far from large enough to modify partly the oil dependency and partly the dominant role of the public sector. Thus, new, ambitious and comprehensive initiatives are needed to boost entrepreneurship and innovation mobilising domestic resources based on public-private partnerships as well as international ones in joint ventures, in which Kuwait's traditional position as a relatively investor friendly and open economy will be beneficial. However, to succeed in such an innovation driven diversification strategy there still remains substantial challenges to be solved, also in comparison with other GCC countries, which the table below clearly shows. The remaining part of this report will analyse most of these challenges from an innovation (theoretical) perspective.

**Table 4: Key Insights**

Focus Area	Policy Prescriptions
Financial Sector Alignment	<ul style="list-style-type: none"> <li>• Entrepreneurship involves risks and risks entail failures. Most entrepreneurs go on to succeed after a few failed attempts. Thus, create an awareness programme to remove the stigma around financial bankruptcy so that individuals, particularly youngsters, look at SMEs as a respectable career choice.</li> <li>• Like their counterparts across the GCC, many aspiring entrepreneurs in Kuwait lack basic financial literacy to present their ideas in a compelling fashion to venture capitalists and angel investors. Also, lack of basic financial skills hinder key activities such as book keeping, budgetary planning, tax understanding, etc, leading to early stage burn out of an idea due to frustration and diminishing confidence in the individual aspiring to start a successful SME. Thus, financial training is a key part of the strategy to boost SMEs in Kuwait and training programmes need to be deployed towards that end.</li> <li>• Create well-structured Islamic finance products for SMEs. The Islamic banking industry is growing at a faster pace than the conventional banking space in the MENA region. If robust regulations exist to encourage and urge banks to provide Islamic finance products for SMEs, it would prove to be an important development for the sector.</li> </ul>
Business Environment Facilitation	<ul style="list-style-type: none"> <li>• In comparison with comparator GCC economies such as the UAE and Qatar, Kuwait lags in a number of determinants of business ease. Various SME activities, right from starting a business to getting electricity, are relatively more difficult in Kuwait, leading to a cumbersome environment for starting a business. Unless reforms targeted at easing operational procedures for SMEs are not brought in place, the condition is unlikely to improve. The authorities should consider setting up an expert panel to understand how conditions for SME related business activities can be eased.</li> </ul>
Politics as a Constructive Participant	<ul style="list-style-type: none"> <li>• A separate independent authority for SMEs is needed. Also, there should be made available a system of fast-track judicial systems for resolving SME related issues. Emphasis should also go to reducing registration hassles and providing clear tax laws.</li> </ul>

<p>Educational Sector Innovation</p>	<ul style="list-style-type: none"> <li>• The spark of entrepreneurship is closely tied to a spirit of curious discovery. An educational system that encourages independent thinking in an environment that embraces technology is bound to create visionary and confident individuals who are willing to take risks based on their professional passions. The educational sector in Kuwait will have to undergo significant reforms in order to come in line with the strategic objectives for private sector led economic growth. The authorities will have to quickly embark upon updating the curricula and including studies on entrepreneurship at an early stage in the educational ladder to make a serious impact.</li> <li>• Steps should be taken to work in conjunction with educational sector stakeholders in the country to create more opportunities for vocational training for learning business management skills in terms of new entrepreneurs</li> </ul>
<p>Research &amp; Support</p>	<ul style="list-style-type: none"> <li>• There should be steps taken to create a body with a one stop shop website to provide information and reports on various markets and sectors in Kuwait so to enable effective investments by SMEs. Setting up incubators and assigning mentors to assist new SMEs will also greatly help.</li> </ul>
<p>ICT Intensification</p>	<ul style="list-style-type: none"> <li>• For Kuwait to transform itself into an exemplar of private sector led growth, the SMEs that take root in the country should over time be able to expand their wings in the wider region and further onto the rest of the world. A key enabler for SMEs to develop clientele beyond their national boundaries is the use of ICT as a strategic arm of their businesses. Thus, Kuwait should have distinct ICT policies that will pull the country up the ladder of competitiveness given the current lag it faces in the area. Kuwait is the only country in the GCC that does not yet have a separate regulatory authority for the ICT sector<sup>1</sup>. A crucial first step would be to develop an independent authority for ICT development and quicken the pace of fibre optics implementation.</li> </ul>

<sup>1</sup> UN- Economic and Social Commission for Western Asia

<p>Assimilation into the Stock Exchange</p>	<ul style="list-style-type: none"> <li>In January 2012, the Qatar Exchange launched the QE Venture Market in order to list and trade the securities of Qatari SMEs<sup>2</sup>. The development was a pioneering one in the region and is worthy of emulation by the Kuwaiti authorities, as well. Listing of Kuwaiti SMEs within a sequestered platform on the national stock exchange system will give the entire sector significant respectability and sense of professional acceptance, thus boosting their uptake.</li> </ul>
<p>Exploration of alternative financing mechanisms like Crowdfunding</p>	<ul style="list-style-type: none"> <li>Crowdfunding or peer-to-peer lending may be the financing mode of the future in terms of SMEs. The government can get into study of this market space early in terms of facilitating its development in Kuwait under a reliable regulatory framework that safeguards the legitimate interests of all concerned stakeholders.</li> </ul>

Source: Marmore

**Table 5: The UAE versus Kuwait: Comparison Across Key Global Indicators**

Indicator	UAE's Rank	Kuwait's Rank
The Global Competitiveness Report (GCR) 2014 – 2015* (rank out of 144 countries)	12	40
World Bank's Ease of Doing Business 2015 (of 189)	22	86
The Global Innovation Index 2014** (of 143)	36	69
The Logistics Performance Index 2014*** (of 160)	27	56
The Networked Readiness Index 2014* (of 148)	24	72
GCR 2014 – 2015* Health and primary Education Rankings (of 144)	38	82
GCR 2014 – 2015* Higher Education and Training (of 144)	6	81
GCR 2014 – 2015* Quality of Institutions (of 144)	7	55
The Corruption Perceptions Index 2014# (of 174)	25	67

Source: \* World Economic Forum; \*\*Cornell University, INSEAD, and WIPO; \*\*\* The International Bank for Reconstruction and Development/The World Bank; #Transparency International. Table from: Dubai Government Summit 2015, Marmore Research, Kuwait 2015.

<sup>2</sup> Mondo Visione 2014

## **4. Understanding innovation - the 'high road strategy' of competition**

Innovation means creating something new (products or services) or making things better and more efficient (new production equipment and improved organization). The innovation capacity of countries and companies determine their competitiveness in a long term perspective in a globalising knowledge economy. There are basically two ways of competing, either through having lower costs than your competitors, or by being more innovative. The first strategy is described as 'the low road strategy', while the second represents the 'high road strategy'. The latter is the only long term sustainable strategy for advanced economies with a high cost and wage level. While it is in principle no limits to how innovative one can be, such limits exist with respect to how cheap things can be made. This implies that advanced, high-cost countries cannot in the long run compete with low cost countries in Asia, Latin America and Africa on a 'low road strategy'. However, also in emerging economies in these regions, such as China and other BRIC countries, one can observe that innovation is strongly promoted not only to compensate for an increasing cost and wage level but primarily to boost a more rapid economic growth through upgrading the economy to producing more knowledge based products with higher value-added potentials. A high innovation capacity results in an economy with higher productivity as well as more value creation.

Innovation capacity, thus, constitutes the most important strategic element of the competitiveness of companies and countries, and represents a dynamic view on competition. A dynamic view on competition implies that the innovation capacity of a country, and consequently its competitiveness, can be promoted by national research and innovation policies prioritizing increased investments in education, research, new technology and an improved collaboration between key stakeholders in the society (public sector, industry, universities and civil society) as well as by strategic decisions of companies to base their competitiveness on innovation. This view on competition is also favoured by international leading public and private organisations such as OECD and World Economic Forum. The latter's competitiveness ranking is partly based on actual performance and partly on underpinning factors, of which some were mentioned above, which directly and indirectly influence innovation and competitiveness in a long term perspective. These are the main



factors which explain why the Nordic countries consistently over time have had a high ranking (among the 10 highest ranked) in the Global Competitiveness Index from the World Economic Forum. In addition to high investments in R&D and innovation, both from the public (government) and private (companies) sector (especially in Sweden and Finland), the Nordic countries are among the highest ranked with respect to educational level, a well-functioning public sector, high degree of social security (welfare state), a stable political environment with good governance and solid institutions, which all contributes to transparent framework conditions for business and a high degree of trust in the population towards government and authorities. These all sums up in what is often characterized as the 'Nordic model'. Kuwait is in 2014 ranked as No. 40 in the above mentioned index. Earlier this year the United Arab emirates launched its government summit, the summit was focused on innovation lead diversification Kuwait could emulate the UAE and glean insights from their progress the summit has some takeaways to offer -

- **Multidisciplinary and interdisciplinary working is key:** Into the future, policy making will have to follow a scientific evidence-based approach. This paradigm shift in policy making calls for an interdisciplinary and multidisciplinary framework in order to create suitable policies. For instance, policy making in education will require inputs from the branches of psychology, social sciences, healthcare studies, etc.
- **Vision and actions are complementary:** Tangible and concrete visions are critical to drive inspiration and spark ambitious change that could lead to achievements. As part of the UAE Vision 2021, the UAE formally established the UAE Space Agency in September 2014 and has announced plans to send an unmanned mission to Mars by 2021.
- **The timeframe of measuring success need not be immediate:** The Summit's principal organizers opined that the significance of the Summit series will "[...] be proven in the coming years, when quality government services are being provided globally, in collaboration with international partners like the United Nations, the World Bank and the World Economic Forum." Thus, building up of tangible success is a long-term project.
- **Seeding innovation will involve experimentation, trial and error, and failures:** One of the salient themes of the Summit was that public servants should

have the flexibility and freedom to experiment new things and commit mistakes, provided that lessons are earned from the mistakes. Right Honorable Francis Maude, British politician and incumbent Minister for the Cabinet Office and Paymaster General, who spoke at the Summit said: "We have to create a culture that supports innovation. If you have not made mistakes, then you have not tried new things. And without trying new things, you will not be able to learn anything new,"

- **Conventional thinking patterns will have to be outgrown:** Innovation is essentially about new ways of solving challenges or problems, and addressing opportunities creatively. Thus, innovation is principally about managing 'creative disruption' effectively. In an age of innovation, capital-based governance and policy-making is not enough, but the core competencies are talent and responsiveness to change. As Klaus Schwab put it during the Summit: "We are not in the age of capitalism. We have entered the age of talents. We will see the second wave of the Internet revolution; we have machine to machine interaction, 3D printing and big data. All together, these will create the tsunami of change in industry."

Along with adopting a proactive visionary zeal in terms of shaping the environment for private sector excellence and innovation, there should also be government programmes, especially in terms of funding, which would allow private enterprise (particularly SMEs) to thrive. For instance, the following table provides samples of SME support programmes that a government can adopt.

**Table 6: Sample of SME support programmes**

Type of Support	Description	Objective
Grants	For acquisition of key assets, e.g. building, plant and machinery. To create or safeguard jobs	Supports sustainable investment, job creation, promotes expansion, modernization and diversification of economic activities in deprived areas
Loan Guarantees (support to Lenders)	Loans from banks to SMEs denied a standard loan due to lack of collateral	Encourage banks to be less risk averse for borrowers lacking collateral
Small Loans to Business	Direct loans to business with available business plan but refused bank finance – typically linked with technical support	Social inclusion by extending opportunity to entrepreneurs who might otherwise struggle to raise finance, including women, minorities and those in deprived areas

Source: USAID (Verbatim)

It is notable that financial markets in the advanced industrial economies offer risk capital through various sets of arrangements. Examples include venture funds, private equity, public trading of shares, etc. For nations in the GCC, which usually enjoy large fiscal reserves, the state could play a greater role in terms of injecting risk capital into the innovatio ecosystem.

#### **4.1 Types of innovation - a short overview**

Innovation is a broad and comprehensive concept with various meanings. Depending on scope and consequences of innovations on the one hand and where innovations are taking place on the other, different meanings of the concept can be specified. The first dimension referred to above lies at the bottom of the distinction between radical innovations, which are new to the market, and incremental innovations, which are new to the firm. This distinction is used in, for example, the Community Innovation Survey (CIS). In spite of radial innovations having the potentially largest impact on firms and societies as individual outcomes, the accumulated economic impact of all incremental innovations will often have greater consequences for job growth and economic growth. Thus, it is important to be aware of this when innovation policies and strategies are discussed and implemented.

The other dimension represents the background for Schumpeter's distinction between product, process, organizational and market related innovations. In addition, he talks about new materials as a point of departure for innovations. Within all these types of innovations

the distinction between radical and incremental innovations can be used, however, this is easiest to do with respect to the technological innovations, i.e. product and process innovations.

Product innovations implies new goods and services, process innovations new ways of producing, organizational innovations new ways of organising firms and work, and market related innovations new ways of marketing or the introduction of new business models. In principle all such innovations can be radical or incremental, and often it may be difficult to determine what is what. The transition from mechanical to digital solutions for telephone operating systems is a radical innovation, while to continuous upgrading of I phone is incremental. What about the introduction of 'smart phones', is this a radical or incremental innovation? The introduction of numerical controlled production equipment can be characterized as a radical innovation, while the introduction of such equipment later in a specific industry will be incremental but with a large impact on productivity in the firm. Organisational innovations have often been less emphasized, however, the way work is organised can have significant impact on how innovative firms are in general and on employee driven innovation, productivity and product quality specifically. Introduction of new technology (e.g. IT-based solutions) will often require organizational innovations to reap the potential efficiency benefits of the introduction of such technology. Market related innovations cover everything from new ways of marketing products, how the customer is approached (in a shop or via internet), and new forms of packaging.

A traditional distinction can be drawn between cost saving and value creating innovations. The most important type of cost saving innovations is of course process innovations, which have represented the backbone of the impressive productivity growth in the Western world in the last two centuries. However, also organizational innovations can, as referred to above, be cost saving, often in combination with new technology. Also the introduction of new materials can have a cost saving effect, e.g. making it faster to produce a good (i.e. the transition from natural to artificial fibers). Most important value creating or increasing innovations are product innovations, and the more radical they are, the greater is the potential. However, also market related innovations are becoming gradually more important as vehicles for increased value creation. Often value creating and cost saving innovations are

interconnected, as new process innovations are based on new product equipment, which are product innovations for the companies producing the technology. Productivity gains as a result of process innovations of course also results in value creation, however, in a longer time perspective value creation through product innovations is needed to avoid ending up in price competition, and, thus, in a 'low road strategy' position. New process innovations produce innovation based competitive advantage but not in the form of unique products and services as a result of product differentiation, which the achievement of sustainable competitive advantage in a knowledge based, global economy must build on. Process innovations represent only temporary improved competitive advantages as they run the risk of being quickly copied and imitated by competitors, and thereby only postpone price competition. Unique product and services through a strategy of product differentiation have the capacity of producing a larger amount of value creation for a longer period of time for firms and societies, and by this represent a more sustainable 'high road strategy' for an economy. Thus, it might look somewhat paradoxical that process innovations are not a sufficient condition but only a necessary one for a firm or a country to remain on a 'high road strategy' in global competition. New product and market related innovations are, therefore, to be considered as 'fundamentals' for a sustainable 'high road strategy' in a long time perspective. This is a great challenge for resource based economies such as Kuwait to be able to create sustainable, innovation based competitive advantage, as process innovations traditionally have been the key mechanism in securing an efficient exploitation of the oil resources.

For innovation to thrive, an efficient and effective landscape is required. However, entrepreneurs in Kuwait have to deal with multiple impediments. Even when compared within the GCC sphere, Kuwait lags behind peers in several key ease of business indicators, which can have an impact on the capacity of the Kuwaiti economy to absorb innovation.

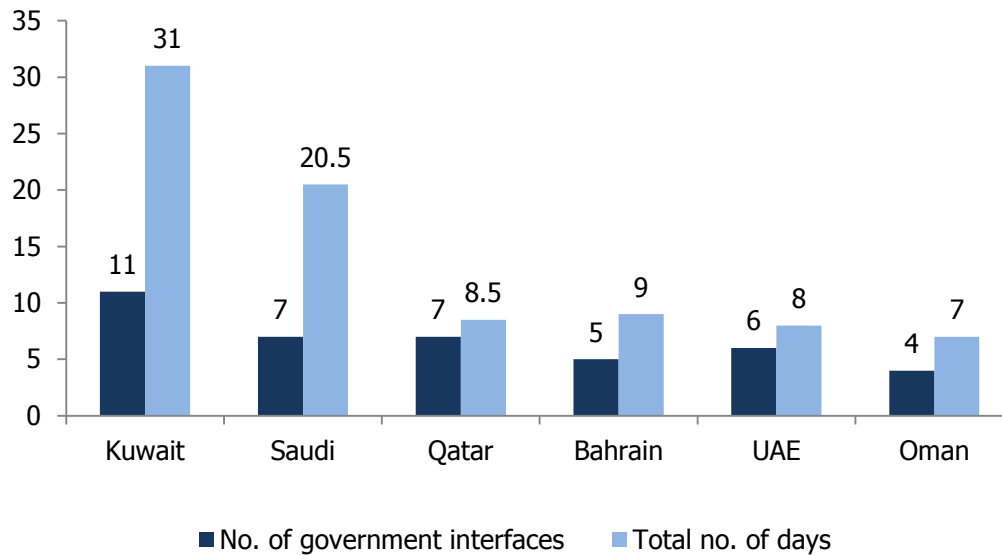
**Table 7: GCC Ease of Doing Business and components, 2015 Rankings**

Economy	UAE	KSA	Qatar	Bahrain	Oman	Kuwait
Ease of Doing Business Rank	22	49	50	53	66	<b>86</b>
Starting a Business	58	109	103	131	123	<b>150</b>
Dealing with Construction Permits	4	21	23	7	49	<b>98</b>
Getting Electricity	4	22	40	73	79	<b>93</b>
Registering Property	4	20	36	17	19	<b>69</b>
Getting Credit	89	71	131	104	116	<b>116</b>
Protecting Minority Investors	43	62	122	104	122	<b>43</b>
Paying Taxes	1	3	1	8	10	<b>11</b>
Trading Across Borders	8	92	61	64	60	<b>117</b>
Enforcing Contracts	121	108	104	123	130	<b>131</b>
Resolving Insolvency	92	163	47	87	112	<b>127</b>

Source: World Bank Doing Business 2015

In Kuwait an entrepreneur has to deal with 11 government interfaces to start a business, while other GCC peers have interfaces ranging from 4 to 7. The number of interfaces has a visible correlation with the number of days to complete the procedure of setting up a business. In Kuwait, the registration process involves registering with five different government agencies, the most in the GCC. Reserving a unique company name takes a day in Kuwait and UAE, whereas in Saudi Arabia and Qatar, the process is completed online. The process in Kuwait also involves receiving inspection of company premises by the Municipality, something which is unique to Kuwait (in the GCC), and takes up to 5 days.

**Figure 1: Number of Government Interfaces vs. Number of Days to Complete All Procedures for Starting a Business in the GCC Countries, 2015**



Source: World Bank, Marmore Research

Another way of making sense of the distinction between cost saving and value increasing innovations is to relate it to the difference between comparative and competitive advantages. While cost saving innovations are especially important to sustain (natural) resource based comparative advantages, which eventually will lead to a low-road strategy of competition, value increasing innovations are key to obtaining, knowledge based, competitive advantages implying a high-road strategy.

#### **4.2 Smart Specialisation - an innovation strategy for economic diversification**

Smart Specialisation (SS) is probably the single largest attempt ever of an orchestrated, supranational innovation strategy to boost economic growth through diversification, and, as such, deserves to be watched closely by other countries aiming for the same goals. It is launched by the EU and is a strategic approach to an innovation based policy for national and regional economic development. It will be the basis for European Structural and Investment Fund interventions in R&I as part of the future Regional and Cohesion Policy's ambition to the European 2020 jobs and growth agenda. SS is being promoted by DG Regio as the basis for the next generation of Structural Fund programs post-2014. The presence of a SS strategy is

a requirement as part of the next conditionality framework for a member state wishing to use its European Regional Development Fund (ERDF) for innovation activities. This is why all member states in EU have to design and implement this strategy to receive structural funds in the coming years towards 2020. Thus, it is of great importance that this strategy is fully and correctly understood, not the least because the choice of key words (i.e. 'specialisation' and 'entrepreneurial discovery') may lead policy makers and practitioners to make false interpretations and draw wrong conclusions (Asheim, 2014).

SS is basically not about 'specialisation' as is known from previous regional development strategies, i.e. Porter based cluster strategy, but about diversification, or diversified specialisation/specialised diversification. Thus, 'smart diversification' would have been a better description of the strategy. What it means is that countries should identify areas - or 'domains' as the SS strategy prefers to call it - of existing and/or potential competitive advantage, where they can specialise in a diversified way compared to other countries. A SS strategy implies maximising the knowledge-based development potential of any country, with a strong or weak R&I system or with a high-tech or low-tech industrial structure.

For many policy practitioners, the concept of SS is closely connected with that of clusters. A cluster is a "[...] geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field linked by externalities of various types" (Porter, 2003). While some of the world's leading clusters specialise in high-technology industries (e.g., Silicon Valley), the phenomenon can also be noticed in multifarious sectors ranging from automobiles to biotechnology. There can often be the tendency to equate clusters with SS, given their multiple similarities. However, the two concepts are not completely similar. Clusters are potential ingredients of a regional/national ecosystem; whereas SS is a wider policy platform that aims to transform an ecosystem. The following table, sourced from research literature of the European Commission, lays out a schematic representation of the similarities and the differences between SS and the clusters approach.



**Table 8: Smart Specialisation and Clusters: A Comparison**

Smart Specialisation Strategies	Clusters
<b>Similarities</b>	
<ul style="list-style-type: none"> <li>• Drivers of performance: productivity and innovation are critical for sustained growth</li> <li>• Multiple factors influence productivity and innovation</li> <li>• Importance of proximity and local spill overs and a critical role of locational context</li> </ul>	
<b>Differences in Emphasis</b>	
Exploring emerging market opportunities	Critical mass
Facilitating knowledge spill overs between knowledge domains	External effects through shared infrastructure and input markets
Exploit related variety between knowledge domains	Groups of companies in related industries
Drive structural change of an economy by embedding innovative practices in economy and society	Enhancing performance of a set of linked companies

Source: The European Commission (Verbatim)

Research on literature on clusters distils five requisites for the buildup of competitive clusters (Clustrat). They are:

- The existence of a web of native or local business relationships that are consciously kept vibrant due to the belief on the part of the cluster firms that they are advantageous with respect to providing an edge in relationships with external firms.
- The presence of ambitious and entrepreneurial firms that have the capacity to continuously seek, identify and exploit new business opportunities, thereby acting as pioneers in the development of innovations that get diffused into the wider cluster ecosystem.
- The existence of institutional actors who are able to generate a favourable context for cluster inter-firm relationships.
- An active connection to research and innovation drivers.

- The resilient capacity of the cluster to operate as an open local cluster, i.e., a "glocal" cluster.

Moreover, countries should diversify their activities based on existing strengths and expertise by moving into related areas through sectoral branching. As an example regions (e.g. in Southern Europe) where tourism is a dominating sector could be used as an illustration. Such regions should not all just go for a plain SSS (sea, sand and sun) strategy, which would end up in a downward spiral of price competition (i.e. the low road strategy), but should combine the quality of the natural endowment with other attractions such as art, culture, gastronomy etc., and/or combine natural, historical and cultural attractions with medical treatment by offering health tourism, in a platform based policy which would allow the local tourist product to travel up-market through a knowledge based process of product differentiation (i.e. a high road strategy).

A new strain of interdisciplinary economics research is emerging that suggests that the measure of economic complexity in a nation can act as the best predictor for future growth. The rationale is that societies function because the citizens form interdependent webs that facilitate specialization and sharing of knowledge with others, which allows the creation of sophisticated production capacities. The more diversified the exports of a nation are in terms of goods, the more likely that productive capacities can keep sliding up the value chain of creative sophistication. Thus, networked knowledge and industrial webs are important enablers for further economic diversification, rather than capital accumulation as reflected in GDP statistics, alone. For Kuwait, hydrocarbon products account 94% of the total national exports, which indicates that the country has low current capabilities in terms of economic complexity. This implies that for Kuwait to economically diversify, the process of economic innovation that can spawn new industries and business models are required.

The wider policy agenda should thematically address issues such as:

- **Building an industrial base through focusing on microclusters:** Taking a regional example, in Saudi Arabia, the creation of the National Industrial Cluster Development Program is considered as a key enabler of the development of automotive manufacturing in the Kingdom. Similarly, the UAE has used its offset programme to building capabilities in diverse areas such as advanced material parts, precision manufacturing, advanced electronics, etc.
- **Connecting small and medium-enterprises (SMEs) to national innovation centres:** SMEs will have to increasingly form an integral part of ambitious transformational efforts such as the KDP. SMEs, if networked into multiple economic clusters (like the KSA model), will support strategies towards integration of workforce and business models, spawning networked ecosystems that can give rise to innovations. This concept flows along the lines of the Silicon Valley in the U.S., the hub of digital technological innovations in that country.
- **Using offsets to harness innovation:** Offsets can be used as a means to access some of the best technological and manufacturing systems and knowhow in the world. The government can use offsets as a form of exploring road maps for long-term industrial growth needs, and for supporting funding at universities, laboratories of government agencies, and businesses R&D.
- **Incentivising sustainable development:** Regulatory frameworks will have to incentivize participation within the sustainable development ecosystem through usage of pertinent long-term policy signals. For instance, financial backing for renewables' SMEs will signal the fact that the government is interested in pursuing success in that sector.
- **Addressing the system holistically:** Government policies are important in sparking a national entrepreneurial culture in terms of cultivating private sector growth. However, it is not the only core determinant. There are other important enabling factors. They are represented in the figure below:

**Figure 2: Elements in an Entrepreneurial Ecosystem**

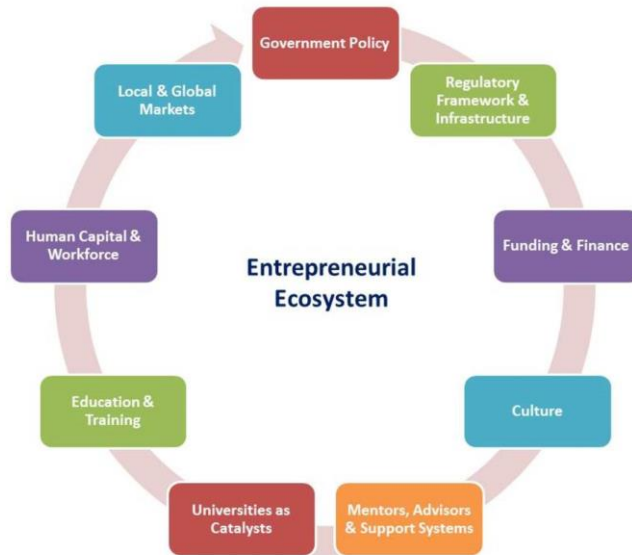


Image Source: Mazzarol 2014, The Conversation Media Group

The 'smart' in the SS strategy refers to the way these domains of competitive advantage should be identified, which is through what is called 'entrepreneurial discovery', to secure specialised diversification across related technologies. Here lies another source of potential misunderstanding, as it easily will be thought of as identical with the traditional entrepreneur resulting in a policy focus only on firm formation as an individual entrepreneurial project. However, it is underlined in the writings on SS that 'entrepreneurial' should be understood broadly to encompass all actors (including individual entrepreneurs), organisations (including firms and universities through intrapreneurship, knowledge based entrepreneurship and spin-offs) and agencies (technology transfer offices and public development agencies) that have the capacity to discover domains for securing existing and future competitiveness. Perhaps Van der Ven's description of 'the entrepreneur' as one type of leadership of the 'innovation journey' comes close to what is meant with entrepreneurial discovery in the SS strategy. He talks about the entrepreneur as a role likely to be played by a core network of interacting actors from the national innovation system, comprising a limited number of firms, universities, public research organisations and government institutions (Van der Ven, 1999), which also, especially for small countries, should include non-local actors in a transnational and - regional cooperation. Given such a broad interpretations it might perhaps have been preferable if the

process of identification of growth areas was called 'innovation discovery' to avoid that the systemic nature of innovations is ignored. The systems approach to innovation policies also highlights the role of government in driving innovation as well as the balance between exploration and exploitation (Asheim and Gertler, 2005; Asheim et al., 2011a).

Some of the ideas in the SS strategy are derived from the Constructed Regional Advantage (CRA) approach which stem from work that started in Brussels in an Expert Group appointed by DG Research of the EU commission and where this expert had a leading part. In 2006 DG Research launched the final report on 'Constructing Regional Advantage' as the new way of taking on and combating challenges and problems of globalisation for European regions (Asheim et al., 2006). Examples of such diffusion of ideas are the recognition that knowledge and innovation are the driving forces of economic development, that history matters which underlines the importance of path dependency, that the process of diversified specialisation can be achieved in all types of industries, that a combined top-down/bottom-up approach should be applied in the implementation of the strategy giving a key role to local and regional stakeholders, that both approaches have a stronger focus on demand than supply for driving innovation, an appreciation of a 'no one-size fits all' policy, and, finally, being in favour of public-private collaboration (Boschma, 2014). As there is more to gain by drawing from this work, especially the knowledge-based approach, which represent a theoretical cornerstone in the CRA approach (Asheim et al., 2011b), we now turn to a short presentation of this approach in the next section to provide more theoretical informed perspectives on how to design a SS inspired strategy for economic diversification.

With respect to work on creating a sustainable STI ecosystem, there appear to be concerted efforts evident in Kuwait. The KFAS Strategic Plan 2012-2016 lays much emphasis on creating a STI system, with the mission: "Stimulate, support, and invest in initiatives and human resources that contribute to the building of a strong STI system and culture and fostering an enabling environment" (KFAS). With respect to KFAS' STI system construction, four strategic thrusts have been identified.

- Developing a strong advocacy for Science, Education and Scientific Culture.
- Enhancing and integrating R&D Capacity in and among Kuwaiti Scientific Institutions.

- Strengthening and Developing the National Science, Technology, and Innovation System.
- Supporting the Development of the Private Sector's Scientific and Technological Capabilities and Participate in Building a Knowledge Economy.

While creating a STI platform, care should be taken to have a balanced approach. For instance, a multiplicity of programmes spread across many institutions in a country could create a lack of focus, thereby inhibiting accumulation of critical mass for innovation. Moreover, a STI framework should not fall into the trap of focusing primarily on the R&D and scientific innovation aspects alone, thereby missing up on more publically useful creative classes of innovation and upon business model innovation. According to the OECD, for domestic STI policies to be successful, they have to prove adept in building international STI linkages. As per this approach, the major aspects are:

General policies for STI co-operation: The key approaches to developing mutually beneficial science and technological (S&T) exchanges and co-operation across borders include exchanges of students, scientists and engineers, spreading of research results through international conferences and journals, open access to research data and networks, joint project calls and funds, and joint research projects, institutes and facilities. According to the OECD, S&T co-operation agreements between nations serve as a framework for carrying out these activities bilaterally or multilaterally.

International public research co-operation to address global challenges: In the backdrop of increasing globalisation of R&D, the internationalisation of public research continues to attract policy attention, and measures supporting the internationalisation of public research institutions and universities are on the increase in recent years. There is also growing recognition of the need for international co-operation in STI to address multiple global challenges (e.g., climate change).

Internationalisation of business research and locational policies: Policies to enable international technological co-operation by firms have largely focused on improving framework conditions, including protection of intellectual property, assimilation of international standards, and enforcement of contracts. However, with globalisation, countries increasingly compete by offering conditions that attract foreign R&D and innovation activities,

via the so-called locational policies. Such policies aim to attract foreign firms and institutions to conduct research and innovation efforts and to interject these activities into national companies.

### **4.3 Theoretical perspectives on economic diversification - an overview of key concepts**

The main message of the CRA approach is to promote competitive advantage through product differentiation creating unique products. This is why the approach is so instrumental in designing and implementing an innovation driven policy of promoting a diversified specialisation according to the SS strategy. While building on the lessons from the dynamic principle of the theory of competitive advantage (Porter, 1998) as well as of the innovation systems approach (Lundvall, 2008) emphasising that competitiveness can be influenced by innovation policies and supporting regulatory and institutional frameworks, the constructed advantage approach especially recognises the role of a proactive public-private partnership and impact of the public sector and public policy support by acknowledging to a greater extent the importance of institutional complementarities in knowledge economies. This approach represents an improved understanding of and response to the problems of system failures caused by lack of connectivity in innovation systems.

As emphasized in the introductory sections, there is a strong agreement that innovation is the key factor in promoting economic diversification and increased competitiveness in a globalising knowledge economy. Competition based on innovation implies choosing the high road strategy, which is the only sustainable alternative for developed, high-cost regional and national economies as well as for the future of developing economies. For a long time such a strategy was thought of as being identical with promoting high-tech, R&D intensive industries in accordance with the linear view of innovation. More and more the recognition has evolved that a broader and more comprehensive view on innovation has to be applied to retain and develop competitiveness in the heterogeneity of countries and regions, i.e. that all drivers of innovation (both supply and demand side (user, market, demand (social innovation)) as well as employee driven innovation) have to be integrated into an overall approach to innovation policy. This requires a differentiated knowledge base approach, distinguishing between analytical, synthetic and symbolic knowledge, to be fully accommodated (Asheim and Gertler,

2005; Asheim, 2007). Such a broad based innovation policy is in line with the innovation system approach of defining innovation as interactive learning combining a R&D (Science, Technology, Innovation or STI) and an experience based (Doing, Using, Interacting or DUI) mode of innovation (Lorenz and Lundvall, 2006).

At a regional and sectoral level - in particular - a 'no size fits all' approach has to be adopted due to the heterogeneity of economies (Tödting and Trippel, 2005). Thus, a Porter perspective was adopted arguing that all industries can be innovative and that the high-tech - low-tech distinction is not relevant at a sectoral level as a point of departure for innovation policies as R&D intensity is not the same as innovation capacity; knowledge is a far broader concept than R&D. This implies that competitive advantage has to be constructed on the basis of the uniqueness of the capabilities of firms and countries, which, however, in a globalising economy becomes more and more knowledge intensive (Asheim et al., 2006). Secondly, that regions and countries should base their competitive strategy on industries they traditionally have been doing well in; i.e. building on their technological path dependency to achieve positive lock-in effects or path extension. The existing industrial structure will also in most cases represent the main source of new path development to secure future competitiveness and to make economies resilient (Boschma, 2015).

According to the Information Technology and Innovation Foundation (ITIF), an innovation ecosystem is not just those elements directly related to the promotion of S&T; it also includes multiple economic, political, and other social institutions impacting innovation. A way to conceptually organize multiple factors determining innovation in a country is to think of innovation as a process of three concurrent factors: the business environment factors along one side; with the trade, tax and regulatory environment along another; while and the innovation policy environment forms the third. In order to align innovation policies to effective economic diversification, there is the need for favourable framework conditions. The following pointers indicate what a favourable framework should largely consist of (European Commission, 2013):

- **Innovation governance and public sector reform:** A nation-wide systematic governance mechanism that will guide and co-ordinate public sector innovation. This



has to be backed up by a long-term strategic view on public sector innovation, along with a capacity to deal with a profusion of disparate reform strategies or ideas.

- **Diffusion and scaling up of good practices:** Successful innovative practices at the public and private sector levels should find ready linkages available for diffusion and systemic assimilation.
- **Smart regulation and responsive administrations:** Recognition that unresponsive and inflexible regulatory frameworks can hamper varied experimentation and learning. Technology adoption: Optimal utilization of technology to provide government services and expedite ease of doing innovation and business.
- **Innovation procurement:** Using public procurement as a driver and promoter of innovation in public services.
- **Funding issues:** Creating accountability-based funding buckets for public sector innovation, and allowing novel financing techniques to develop with respect to private sector innovation.
- **Organisational learning and institutional innovation:** Continuous organizational learning and institutional innovation memory in order to allow creation and implementation of promising ideas on a reliable basis.

Knowledge processes have become increasingly complex in the globalising knowledge economy. The binary argument of whether knowledge is codified (i.e. knowledge that has been stored in certain media and can readily be transmitted to others) or tacit (i.e. knowledge that is difficult to transfer to another person by means of writing it down or verbalising it) becomes too simplistic to accommodate this increased complexity and provide an adequate understanding of knowledge creation, learning and innovation. Thus, a need to go beyond this simple dichotomy can be identified. One way of doing this is to make a distinction between 'synthetic', 'analytical', and 'symbolic' types of knowledge bases, which partly transcends the tacit-codified dichotomy arguing that the two forms of knowledge always co-exist but in different combinations, and partly emphasises that all types of economic activity can be innovative but that the modes of innovation differ, thus, transcending the high tech-low tech dichotomy (Martin and Moodysson, 2013). As this threefold distinction refers to ideal-types, most activities are in practice comprised of more than one knowledge base. However, one knowledge base will represent the critical knowledge input which the knowledge creation and

innovation processes cannot do without. New combinations of knowledge bases, especially when symbolic knowledge is involved, seem to become increasingly important as a source of new path development (i.e. path renewal and path creation).

An analytical knowledge base refers to economic activities where scientific knowledge based on formal models and codification is highly important. Examples are biotechnology and nanotechnology. University-industry links and respective networks are more important than in the other types of knowledge bases. Knowledge inputs and outputs are in this type of knowledge base more often codified than in the other types. The workforce, as a consequence, needs more often some research experience or university training. Knowledge creation in the form of scientific discoveries and (generic) technological inventions is more important than in the other knowledge types, and, consequently, innovations are science-driven. Partly these inventions lead to patents and licensing activities. Knowledge application is in the form of new products or processes, and there are more radical innovations than in the other knowledge types. An important route of knowledge application is new firms and spin-off companies which are formed on the basis of radically new inventions or products.

A synthetic knowledge base refers to economic activities, where innovation takes place mainly through the application or novel combinations of existing knowledge. Often this occurs in response to the need to solve specific problems coming up in the interaction with customers and suppliers, and, thus, innovations are user, market, and demand driven. Industry examples include plant engineering, specialised advanced industrial machinery, and shipbuilding. University-industry links are also for this knowledge base important, but more in the field of applied research and development than in basic research. Tacit knowledge is more important than in the analytical type, in particular due to the fact that knowledge often results from experience gained at the workplace, and through learning by doing, using and interacting. Compared to the analytical knowledge base, there is more concrete know-how, craft and practical skills required, which is provided by technical universities, polytechnics, or by on-the-job training. Overall, this leads to a rather incremental way of innovation, dominated by the modification of existing products and processes.

Symbolic knowledge is related to the creation of meaning and desire as well as aesthetic attributes of products, such as designs, images and symbols, and to its economic use. The

increasing significance of this intangible type of knowledge is observed by OECD (2013) mentioning e.g. design as a new source of growth as part of firms' knowledge-based capital as well as through the dynamic development of cultural production such as media (film making, publishing, and music), advertising, design, brands and fashion. In cultural production the input is aesthetic rather than cognitive in quality. This demands rather specialised abilities in symbol interpretation and creativity. This type of knowledge is often narrowly tied to a deep understanding of the habits and norms and 'everyday culture' of specific social groupings. Due to the cultural embeddedness of interpretations this type of knowledge base is characterized by a distinctive tacit component and is usually highly context-specific. The acquisition of essential creative, imaginative and interpretive skills is less tied to formal qualifications and university degrees than to practice in various stages of the creative process, however, also this knowledge base has become increasingly more knowledge intensive.

#### **4.4 New path development for economic diversification**

When designing and implementing a SS inspired innovation strategy for industrial and economic diversification, it is necessary not only to consider how to secure 'path extension', which has been the main goal in much of traditional innovation policy, especially in countries with a resource based economy due to the importance of process innovations to secure high productivity in the exploitation of natural resources such as oil and gas. Path extension mainly results in incremental product and process innovations in existing industries and technological trajectories. While this can secure competitiveness and growth in a short and medium term perspective, in a longer time perspective these industries run the risk of path exhaustion, referring to situations where the capacity for renewal is lacking. Path renewal takes place when existing local firms branch into different but related activities and sectors. Countries' industrial specialisation and firms' knowledge bases shape the types of renewal that occur in the form of sectoral branching (Boschma and Frenken, 2011). New path creation represents the most wide-ranging changes in a regional economy. It includes the establishment of new firms in new sectors, or firms that introduce new products, processes and/or business models in the regional economy. Path creation is most often R&D driven and can either be the result of knowledge based entrepreneurial discovery (university spin-offs through commercialization

of research results) or proactive national innovation policy aiming at constructing regional advantage as is the goal of VINNOVA's (Swedish Governmental Agency for Innovation Systems) Center of Expertise programmes (Asheim et al. 2013; Asheim et al., 2011b). Sweden has a long tradition for publicly funded, ten years programs for building competence considered to be of strategic importance for future competitiveness of Swedish industry (e.g. generic technologies such as ICT, electronics and biotech). VINNOVA's CoE programs also have a ten years duration and are developed within a Triple Helix framework (i.e. based on collaboration between industry, universities and the public sector). The programs have a productive top-down/bottom-up design, being national programs (top-down) but mobilising local (triple helix) stakeholders in the application, implementation and operational phases. VINNOVA provides 50% of the funding, while the local stakeholders are responsible for the remaining 50%, which keep them strongly committed to the program. As the CoE programs aim at creating new path development, they have a strong focus on exploration, i.e. new research based knowledge, and is consequently university owned, even if the close link between exploration and exploitation always are underlined (thus the name 'strong research and innovation milieus'). In this context it should be remembered that Sweden is a high-tech country with many large, global companies and, thus, can mobilise large public and private human capital and financial resources in promoting such a R&D based innovation policy.

Without effective structural reforms, increased funding can just fall through the gaps without creating the commensurate value. Structural reforms have to co-evolve and support increased funding in order to sustain growth and job creation. Weak competitiveness, resulting in higher costs of production, can turn away potential investors and possible buyers of domestically produced products. Meanwhile, given the various unique circumstances, hereditary legacies and social conditions that various countries deal with, a homogeneous path to structural transformation is a near impossibility. In Kuwait, strategic structural economic transformation has to have the effect of over time shifting more people from the public sector to private enterprises. For this, private enterprises must not only have to the jobs to offer, but they should be able to incite passion among job seekers, along with respectable pay packages. The roadmap will invariably involve the following items for Kuwait:

- Increased productivity through human skills development.

- Access to better financing systems for SMEs
- Eased access to land and essential utilities for SME, i.e., reduction in red tape
- Better trade logistics, regulations, customs procedures, etc.
- Development of vibrant industrial zones and free trade areas.
- A viable and sustainable tax system for companies.

Moreover, it is also important for policy makers to have an eye on the temporal aspects of diversification if it is based on new path creation, as capability building promoting short cycle technology-based sectors (synthetic/engineering knowledge base) securing technology based specialisation for most countries is a far better, more efficient and cheaper strategy than long cycle technology based sectors, such as biotech and life-sciences, based on analytical knowledge. This is far costlier, has a much higher failure rate and longer perspectives for a positive outcome in the form of tangible economic results such as new firm formation, job growth and economic development (i.e. has a long time perspective from exploration to exploitation).

The main problem of traditional industries with respect to promoting new path development (path renewal) and making them more innovative and competitive is the low educational and competence level and a lack of investment in R&D. This implies that these firms and industries have a low absorptive capacity, which limit their capacity of accessing and acquiring new and often external knowledge, make use of new production equipment and penetrating new markets, especially international ones. It also handicaps them in approaching universities to make their knowledge more research based and/or informed, which would extend their mode of innovation to the STI type. What is needed is to build absorptive capacity of DUI based firms by increasing their research based competence (Isaksen and Nilsson, 2013). This is an important strategy for the upgrading of traditional industries, as research has demonstrated that combining DUI and STI makes firms perform better by utilising both analytical and synthetic knowledge bases.

Another strategy of upgrading of traditional industries is to move into high value-added niches. This is a strategy that most efficiently can be realised by mobilising the symbolic knowledge base, often in combination with synthetic knowledge, and to apply a platform approach, i.e. transcending traditional sectors, in the concrete design and implementation.

This would normally imply that the firms continue to rely on the DUI mode of innovation, but are able to climb the value-added ladder by introducing new products that has a high element of symbolic knowledge to achieve product differentiation and, thus, represent a unique product at the high-end of the global market. Recent studies, in this case from Italy, shows that regions with a significant symbolic knowledge base (but not prevalent) which is balanced with other knowledge bases, in particular with the symbolic, are the most positively performing.

One example of the power of exploiting the symbolic knowledge base to create a unique product as a distinct luxury good in the high quality market of smoked salmon, is the Swiss Balik salmon. This achieves 2-3 times higher prices and similar value-added than similar Norwegian smoked salmon, even if the basic raw material is the same, farmed Norwegian salmon. The difference is the marketing of the product, partly that Balik salmon is sold at Caviar House outlets at airports to achieve exclusivity and partly the story accompanying it, that it is made by a recipe from a Russian tsar and washed in water from a Swiss mountain river. This is, thus, an example of a market related innovation informed by the symbolic knowledge base and demonstrates the value creating potentials of such innovations.

A third strategy of upgrading is through unrelated knowledge base combinations leading to new related industries. We shall maintain that this has been overlooked and represents unexplored potentials for new path development. Empirical illustrations of unrelated knowledge base combinations resulting in new path development would be traditional textile industry moving into technical textile by adding nanotechnology (analytical knowledge base) to the traditional (synthetic) knowledge base of the industry, or the development of new media industry by combining unrelated symbolic knowledge with the analytical/synthetic knowledge bases of existing ICT industry.

All these strategies for economic diversification are valid for Kuwait. Path extension or positive lock-in will always be the most important perspective for upstream exploitation activities, i.e. securing optimal efficiency and productivity for the oil production. Downstream have more potentials for path renewal through an increased emphasis on petrochemicals and other higher value products. In this context it is important to try to identify niche markets, where the scale of production is not the critical factor, in order to be able to base the production on

a product differentiation strategy to avoid a cost based competition. Here an emphasis on increasing the R&D or STI content of the production utilizing both analytical and synthetic knowledge bases will be of strategic importance. There might also be potential of achieving diversification by linking more unrelated knowledge in the form of generic technologies such as bio- and nanotechnology to petrochemicals to produce totally new products.

Another way of diversifying downstream in related activities is to manufacture production equipment for the oil and gas industry. This is one of the success stories of the Norwegian oil and gas industry, exploiting the offshore exploitation experience to become the world leading producer of deep sea drilling and exploitation equipment for oil and gas production. Kuwait could in a similar way exploit its specific physical geographical conditions to secure a global leading position for production equipment for the industry. This might need joint venture cooperation with foreign MNCs to tap into knowledge and resources that are not available domestically. This would be the case for other types of downstream diversification (including offset agreements), too. This will need a strengthening of both basic (analytical knowledge) and applied (synthetic knowledge) research.

Outside the oil and gas sector there is huge potential for economic diversification in renewable energy, particularly solar energy, both with respect to energy production and supply locally and regionally but also regarding manufacturing of production equipment, e.g. storing capacity. The geographical location is optimal and there is a large regional market for such production. There have already been announcements by several GCC countries with respect to the targeted solar energy output. The following table provides a snapshot of the goals of the various GCC countries with respect to solar energy and the current rate of activity.

**Table 9: GCC Solar Energy Developments**

Country	Target (MW, Year)	Year Announced	Installation as of 2014 (MW)	Under Construction (MW)
Saudi Arabia	41,000 (2040)	2012	~50	50
UAE – Dubai	1,000 (2030)	2011	13	200
UAE – Abu Dhabi	1,600 (2020)	2009	110	-

Oman	200 (2020)	2012	-	-
Kuwait	2,000 (2030)	2012	-	50
Qatar	1,800 (2020)	2012	4	-
Bahrain	No Announcements	-	5	-
<b>Total</b>	~ 48,000		~ 180	~300

Source: Arthur D. Little

There is little doubt among many experts that the GCC region can prove very competitive in terms of solar energy generation costs. For instance, in Saudi Arabia, it is possible to achieve a solar LCoE of around \$70/MWh in the higher irradiation/elevation areas in the western parts of the Kingdom . In the areas close to the Gulf with respect to the Kingdom, the LCoE can reach about \$90/MWh, which is still quite competitive in comparison with the international benchmark of \$100/MWh. Some GCC countries have ambitious renewable energy plans, in which solar energy will play a key role. However, it should be noted that the objectives can vary in consistency across the region . Kuwait has renewable energy targets, which incline upwards in a phased manner, ranging from 1% (mix undefined) renewables-based power generation by 2015 to 10% (~ 7.7 GW) by 2020, and 15% by 2030.

**Table 10: Renewable Energy Targets in the GCC States**

Country	Target (MW, Year)
Bahrain	5% by 2020
Kuwait	1% of electricity generation by 2015; 10% by 2020; 15% by 2030
Oman	10% of electricity generation by 2020



Qatar	At least 2% of electricity generation from solar energy sources by 2020
Saudi Arabia	50% of electricity from non-hydrocarbon resources by 2032: 54GW from renewables (of which: 41GW from PV and concentrated solar power (CSP), 9GW wind, 3GW waste-to-energy, 1GW geothermal), 17.6GW from nuclear
UAE	Dubai: 5% of electricity by 2030; Abu Dhabi: 7% of electricity generation capacity by 2020

Source: Oxford Institute for Energy Studies

The same is the case for water resource technology both for desalination and for water use efficiency. In addition to the large regional market, there is also a growing global market, e.g. manifested in the large draught problems in California.

With respect to diversification based on more basic research oriented activities such as life science (or health and medicine), these should be demand driven producing drugs for diseases which are growing in Kuwait and in the larger Arab and North African region. Examples of such diseases are diabetes and obesity, which are rapidly developing into serious chronic diseases in the region. It would probably represent a smart use of money to stay as close to the exploitation phase (i.e. after testing and examination) as possible, where a combination of analytical (basic research) and synthetic (applied research) is instrumental, and where proximity to the end users could be a strategic advantage. By doing this one could avoid the costly and risky first stages of drug development, which require huge human capital and financial resources. Even if Kuwait has very large financial resources, the building up of sufficient R&D capacity to carry out basic life-science research is so resource demanding that often only US and the largest pharmaceutical companies have the capability of doing this.

Another sector with potentials for economic diversification is the bank and financial sector, which next to the oil and gas industry has been the most international successful and also one of the innovative sectors in Kuwait, e.g. the asset management industry (at least until the financial crisis in 2008). This position of (previous) relative strength should be redeveloped and further exploited in tandem with the growth and success of the Kuwait economy as a result of the diversification process. And finally Kuwait also has creative sectors which could be upgraded drawing on the symbolic knowledge base. Kuwait is one of the countries in the Gulf with a theatrical tradition, their soap operas are among the most watched in the Arab

world, and it has also the oldest modern art movement in the GCC. GCC Here lies great opportunities for an expanding market commercialisation, which especially would be achievable for entrepreneurs and small firms, as the threshold with respect to capital and competence probably is lower in these sectors. In addition, in these sectors it is also easier to exploit ICT and social media to come up with and market new products and services, not only for the Kuwait market but also for the whole Arab speaking world. It is, thus, interesting to see that the newly established Kuwait national fund for SME development as one of its prioritised areas has pointed at creative industries mentioning media (as referred to above) and also design. In this context it is, moreover, important to note the strategic role the symbolic knowledge base plays in media and creative industries in establishing innovation based competitive advantage. It is precisely symbolic knowledge - aesthetics, culture, narratives, both historical and contemporary - that have the potentials of creating unique products and, thus, achieve product differentiation as the basis for competitive advantage.

Concerning the role of SMEs and new firm formation in an innovation driven economic diversification strategy it is important to recognise that what is needed is knowledge intensive firms with products and services at the end of the value chain that can offer unique products and services with high value added potentials to the market. Such products and services can obtain the necessary product differentiation for a sustainable, innovation based competitive advantage which satisfies the criteria of a smart specialisation strategy. This represents what is often called 'entrepreneurship by opportunity' in contrast to 'entrepreneurship by necessity', which is mostly found in less developed economies representing an alternative for unemployed, unskilled people, and which has neither any innovative nor value-added potentials. This is also observed and recognised in a report from Markaz Research (2014) that maintains that 'for Kuwait the needs to push for SMEs that are focused on the technological sector is of paramount importance, in terms of strengthening the nation's innovation capabilities' (p. 1). However, as is emphasised above, in addition to basing SMEs on analytical and synthetic knowledge bases, it is also important to exploit the potentials that the symbolic knowledge base offer especially for SMEs in media and creative industries.

In general, based on the above discussion it should be demonstrated that Kuwait could easily follow a smart specialisation strategy of an innovation driven diversification of its economy to

become more knowledge-based and internationally competitive. Some international examples of the SS strategy are as follows:

**Table 11: Some International Examples of Smart Specialisation (SS)**

Country	SS Application
The UK	<ul style="list-style-type: none"> <li>• Innovate UK agency accelerates innovation in those technologies with maximal success chances.</li> <li>• Examples include high value manufacturing; cell therapy; offshore renewable energy; etc.</li> <li>• Network of connecting centres (Catapult Centres) bridge the gap between academia and businesses</li> <li>• Clusters based approach based on locational strengths is deployed (London for digital).</li> </ul>
Norway	<ul style="list-style-type: none"> <li>• Used its oil&amp;gas and maritime industries to build manufacturing for companies in the sectors.</li> <li>• Centres of expertise built around oil/gas, maritime, metal melting, and shipping industries.</li> <li>• A bridging programme called 'Norwegian Innovation Clusters' programme.</li> <li>• Norwegian clusters are encouraged to participate and compete in global research programmes.</li> </ul>
Dubai (The UAE)	<ul style="list-style-type: none"> <li>• Strategic geographic location used to build industrial and logistics hub.</li> <li>• Dubai leveraged free trade zones to build financial and aviation hubs over time.</li> <li>• Initial clusters experience used to build innovation ones like the Dubai Media City.</li> <li>• An ecosystem approach used. E.g., offsets for constructing industrial manufacturing.</li> </ul>
Finland	<ul style="list-style-type: none"> <li>• Arctic research (e.g., renewables) and bio-economy (wood, etc.) identified as key for growth.</li> <li>• FiDiPro Programme – researcher recruitment programme</li> <li>• Cross-fertilisation between and among sectors and technologies</li> <li>• Cooperation with Russia identified as key for research and resource efficiency.</li> </ul>

Source: Marmore research

#### **4.5 Resource curse - a question of natural resources or bad governance?**

In countries with an abundance of natural resources such as Kuwait it is often asked if this has to lead to a resource curse trap or if it could be turned into being beneficial for the whole country and its population by promoting a rapid and healthy economic and social development? However, by addressing the problematic in this way, two different but interconnected problems are often collapsed; a) How to avoid the resource curse trajectory, and b) How to reduce the dependency on natural resources.

It is very important to make this analytical distinction explicit as these two problems cannot be solved in the same way. First, basically there is no deterministic causality between abundant natural resources and experiencing a resource curse. Norway and Nigeria have both abundant oil and gas resources, however, while Nigeria is the typical example of a country plagued by resource curse, Norway is one of the world's richest countries not the least thanks to the way the natural resources have been exploited and managed. In addition, due to strict governmental practice independent of governments concerning use of the oil and gas income in the on-shore economy as well as a long tradition of macro-economic planning (initiated by the first Nobel laureate in economics, professor Ragnar Frisch, University of Oslo), Norway has also avoided the so called 'Dutch disease', even if the high activity level in the private part of the oil and gas sector in the ten years period up to the recent fall in prices have driven the Norwegian cost to a level, which has made the remaining part of the economy loose its competitiveness. Secondly, to avoid ending up in a situation that can be described as a resource curse, the development of good governance practice and solid institutions are needed, while for reducing natural resource dependency innovation is the key mechanism in promoting an increased diversification of the economy. Thus, innovation as such cannot reduce the resource curse problem, as innovation performance is found to be poor in contexts of bad governance.

Several recent analyses of lack of innovation and economic growth in Southern and Eastern Europe have clearly documented this (Charron et al., 2014). The strategy of avoiding the resource curse in a process of reducing natural resource dependency and promote economic diversification has to go via the introduction of good governance practices as a necessary condition for innovation, as the sufficient condition, to work efficiently towards creating a

diversified and competitive knowledge-based economy. The important roles of government in a globalised world economy and of innovation as a source of national competitive advantage are also recognised by analysts in Kuwait (see the section 'What can Kuwait learn from the Summit' in Dubai Government Summit 2015, Marmore Research, Kuwait, 2015).

The key aspect in this discussion is as mentioned the question of the quality of governance. Nigeria is an obvious case of an oil rich country with poor governance and Norway a country with good governance. Kuwait could be placed in a middle range between countries with poor and good governance (Al Sabah, 2013). Nigeria is definitely one of the worst contemporary examples of a country that is experiencing a resource curse: more than 60% of the population lives under the poverty line, 40% of the population are analphabets, 2% of the population controls more than 80% of the oil wealth, and the country is ranked as No. 136 out of a total of 174 countries (North Korea and Somalia is the two lowest ranked countries) on the international corruption index in 2014. To illustrate that this is not a question of geographical location, Ghana, which also is a West-African country, is ranked as No. 61. And it is neither a question of oil and gas richness as Norway's ranking is No. 5. In this context it is noticeable that all Nordic countries are ranked among the five highest ranked with Denmark on top as No. 1, Finland as No. 3 and Sweden as No. 4 (only New Zealand comes 'between' as No. 2).

As pointed out earlier all the Nordic countries are very affluent, have innovative and competitive economies, are well-developed welfare states, and this is independent of the countries' current economies being natural resource dependent (such as is the case of Norway) or not. This emphasizes the importance of non-economic factors such as governance and institutions for economic development and performance, which is also clearly documented in comparative, historical studies of economic development (Berend and Ranki, 1982; Senhaas 1985) as well as in similar contemporary analyses (Hall and Soskice, 2001).

Some analysts and researchers have pointed out that the GCC has been able to develop pockets or "islands of efficiency" (Hertog 2010). A case in point is the well-run Saudi Aramco. Such entities display some unique traits, which include:

- Insulation from undue influence of political actors and the rentier economic superstructure.

- Careful appointments to key positions that are based on merit and proven track records.
- Hiring structures and salary scales that are distinct from the rest of the public sector.
- Special regulations that help in cutting through the maze of bureaucracy.

Thus, pockets of efficiency will have to develop more as a result of conscious policy rather than by accident. It is a matter of choice that is oriented towards a certain set goal. Kuwait is ranked as No. 67 in the 2014 corruption index ahead of e.g. Greece and Italy ranked as No. 69. The highest ranked among the Arab Gulf countries are UAE and Qatar as Nos. 25 and 26 respectively. This ranking confirms placing Kuwait in a position between Norway and Nigeria on the quality of governance. Looking at specific areas, such as e.g. banking, Kuwait is doing better; it was e.g. one of the first countries to implement the Basel III requirements. However, good governance is not only about corruption and transparency but also about the quality and efficiency of public administration and public services. Concerning other aspects of governance the situation is not that favourable. Kuwait is ranked as No. 150 - the lowest of the GCC countries - with respect to starting a business in the World Banks ranking from 2015 (Markaz Research, 2014) , and the public education and health sectors are among the lowest ranked sectors with respect to performance (see table 3, p. 14 in this report). This indicates a large and inefficient bureaucracy and underperforming public sectors.

The need for limiting public bureaucracy and create a more decentralised decision making system as well as to obtain a higher degree of accountability in public and private institutions are referred to in the Kuwait competitiveness report as being among the most important economic policy measures to upgrade the proficiency of the economy (Al Sabah, 2013 also table 4 below). In contrast, Norway has one of the most efficient public administrations in the world, nearly completely ICT-based (the tax system, earning increased internationally reputation, being just one example), and in general providing high quality public goods and services, ones again underlining its importance for economic performance.

**Table 12: GCC Ranking for the Index of Wastefulness of Government Spending**

Country	Rank of 144	Score (1 – 7)*
Qatar	1	6

UAE	2	6
Oman	6	5.1
KSA	12	4.7
Bahrain	17	4.3
Kuwait	92	2.8

\*Note: The lower the score, more the inefficiency.

Source: World Economic Forum, 2014-15

Thus, given the vital importance of governance and institutions for economic development and prosperity, it will constitute one of the six pillars of recommendations for how Kuwait can design and pursue an innovation driven policy for economic diversification. The six pillars of recommendations, formulated around six Cs, Concentration, Connectivity, Cooperation, Capital, Competence, and Coordination, will be presented and discussed in the following sections. The strategy outlined in the six Cs will be framed within and informed by the preceding theoretical sections on innovation as a high road strategy and smart specialization as an innovation based policy to secure economic diversification through product differentiation; i.e. to create unique products and services as the way to build innovation based competitiveness as a sustainable high road strategy. We start out with a discussion of the importance of concentration as it plays a key role in the thinking around smart specialisation as a strategy for an innovation driven policy for economic diversification and international competitiveness.

## **5. Towards an innovation driven strategy for economic diversification - the six Cs**

### **5.1 Concentration**

Concentration, understood as having a strong focus in the policy design of prioritizing, targeting and carrying out strategic decision making, must have a core role in an innovation based policy for economic restructuring. Specifically as a smart specialization strategy is concerned with diversified specialization, meaning that countries should specialise in sectors where they either have competitive advantages and/or where they have the necessary

competences and resources to develop such advantages in the future, and that this should be done in such a way that the new specialisations are different or diversified relative to competing countries. This is based on the fundamental principle of diversified specialization, i.e. to create unique products and services through product differentiation, which is the only sustainable basis for an innovation based competition. Thus, concentration to develop sectors based on existing and/or potential future competitive advantage is only the first and necessary step towards a successful selection of sectors to promote, while the second and sufficient step is to consider and analyse if these sectors also satisfy the second criteria of being diversified enough with respect to products and services compared to sector specialisations in other, competing countries. This implies that the sectors can be the same but that the products and services that the sectors deliver should be diversified in one way or another to what is the case in competing countries. An illustrative example of such product differentiation is the higher end of the automotive market, the luxury car segment, which is the only part of the market that has not suffered any setbacks so far during the economic and financial crisis. This is intuitively somewhat paradoxical as there are many similar cars on the market with the same quality, standards and performance, e.g. Jaguar, Mercedes, BMW, Audi or Lexus, and, still, they do not seem to compete neck-to-neck with each other as is the case in the lower end of the market. This is precisely due to all these expensive cars having a specific aspect of product differentiation associated with their brands, an identity in which symbolic knowledge plays a key role establishing, and which create a situation of monopolistic competition where price is not the decisive factor. An example of Concentration is the Indian IT industry, which drew upon decades of science and engineering education and talent to build an effective ecosystem for the sector to thrive.

In Kuwait the recognition of the importance of 'concentration' is in place and appears in the strategies of different private and public organisations, such as KISR (Kuwait Institute for Scientific Research), KU (Kuwait University), KFAS (Kuwait Foundation for the Advancement of Sciences), and the Kuwait National Fund for SMEs Development, which represent important agencies in designing and implementing exploration and exploitation strategies for the promotion of a knowledge based diversified economy. KISR, founded in 1967, is an independent public organization. KISR is the dominant R&D player in Kuwait with the



main responsibility of the development of a national research agenda with a specific focus on applied research. Kuwait University is the largest university and the leading institution of higher education in the country. KFAS, founded in 1976, is a private, non-profit based organisation with a mission to promote scientific and technological advancements by supporting scientific projects, the scientific community and the country's scientific infrastructure. It is said that it could perform similar but not identical roles to those performed by the National Science Foundation and the National Institutes of Health in the United States. However, there is an important difference between KFAS and the American organisations as the US ones are publicly funded, and, thus, has accessibility to the resources necessary to fund large scale, basic research activities, while KFAS is funded by private capital. Kuwait National Fund for SMEs Development is a new initiative established in 2013 to provide financial resources (seed money and venture capital), education and training and other types of support such as incubators and accelerators for the promotion of SMEs and new firm formation. An interesting observation from this listing is that Kuwait seems to have much stronger focus on R&D/STI policy, or the exploration side, than on the exploitation side, where the new fund for SME development stands out as the only 'pure' exception. This is probably due to the dominance of the oil sector and its dominant player, the Kuwait National Petroleum Company (KNPC). However, it may also underlie a structural weakness of the policy measures of Kuwait with a relative neglect of a broader innovation policy aiming at transferring knowledge from basic and applied research to the market through innovations in the shape of new products and services.

A dominant company in the largest traditional sector such as KNPC cannot be expected to take on such a role, as the path-dependent nature of such companies implies a strong focus on path extension. Thus, Kuwait probably has much to learn from Sweden's VINNOVA (Swedish Governmental Agency for Innovation Systems), which precisely as one of its main missions has the task of linking research with industry, both big industry and SMEs. It is important to remember when talking about an innovation based diversification strategy that innovation and knowledge is more than R&D, and that innovations, understood as commercialization (i.e. bringing inventions to the market), does not just happen by itself, even if higher education and research of course is a strategic input in such a policy. As is (or should at least be) well-known, investments in basic science and R&D does not automatically lead to

innovation, job creation and economic growth. Such a strong focus on R&D and a resulting neglect of a broader innovation policy, following a linear model of innovation, is the major shortcoming of EUs innovation policy, explaining the lack of a positive economic and social development in most Eastern and Southern European countries, which the new policy of smart specialisation has the potential of correcting, if properly interpreted and implemented.

There is a need to provide a centralized framework to coordinate R&D efforts, especially in terms of exploitation of technologies for creation of disruptive new products and services. A national network of technology and R&D innovation centres can support comprehensive access to specialist expertise and capability, which will go a long way in easing the commercialization process. Commercialisation technologies will require investment in facilities, research networks, testing procedures and the development of promising solutions over the long term. The public sector in Kuwait can play a key role in this process through the strength of the deep pockets that it possesses, which imbues it with the quality of 'strategic patience', if required. In terms of leveraging domestic, regional and international R&D linkages in the interest of commercialization technologies, Kuwait can look closely at the activities of the Technology Strategy Board (TSB) in the U.K. The TSB creates opportunities for better commercial R&D through the following steps.

- **Collaborative R&D:** Providing funding to facilitate business and research communities to work together on R&D projects, so that successful new products, processes or services can emerge.
- **Knowledge Transfer Networks (KTNs):** Using e-technologies and the digital environment to allow necessary connections between the various R&D and innovation players to develop. This would help industry access knowledge and information that would support strategic growth plans.
- **Knowledge Transfer Partnerships (KTPs):** Funding multiple live R&D projects every year, which would bring together numerous qualified high caliber graduates together.
- **Small Business Research Initiative:** Funding small businesses to come forward and solve challenges that public sector companies face.

- **Grant for Research and Development:** Funding for high-risk and possibly high-reward technology innovation projects that SMEs are conducting.

The strategies of the organisations mentioned above is - with a minor exception of the fund for SMEs development - very much influenced by the priorities and recommendations of the report of the Kuwait Research Review Panel, published in 2007 (even if the panel's overall recommendations has not yet been implemented on a national scale (for more on this, see the sixth C on coordination. In this report the following areas are highlighted as prioritized sectors for Kuwait's development as knowledge based and diversified, international competitive economy:

- Petroleum and Petrochemical research both upstream and downstream
- Renewable energy with a focus on solar energy
- Water both in the development and application of desalination technology and efficiency and protection of water resources
- The financial sector which already is one of the most innovative private sectors and where targeted R&D could further develop its strength
- Research in health and medicine, environment, food quality and safety, biotechnology and fishery development.

The strategic plans of the above mentioned organisations cover most of these areas as their prioritised areas of R&D activity. Most of them also have a strong focus of becoming the leaders and dominant players in the region (Gulf countries and the Arab countries of North Africa and the Middle East) but also with the hope of becoming globally competitive in some of these areas (in addition to the oil sector). Finally, the national fund for SMEs development is mentioning creative industries (media and design) and ICT, which are well adapted sectors for SMEs development, as part of its strategy.

All in all, in the strategic plans of these organisations one finds a high level of concentration to areas and sectors that seem well suited for a smart specialization strategy for an innovation driven diversification policy. However, as was emphasized above, the concentrated efforts of various Kuwaiti agencies and organisations have too one sidedly been focusing on strengthening the R&D capacity, i.e. the exploration side, which is very well motivated given the low level of R&D investments, while few efforts seem to have been concentrated on a

similar strengthening of the innovation capacity, i.e. the exploitation side. In Sweden a division of labour with respect to funding of R&D exists between the national research council, which funds Centres of Excellence, i.e. centres at universities and research institutes focusing on basic curiosity driven and targeted research, while VINNOVA funds Centres of Expertise, which require a 50% industry participation, i.e. combining exploration and exploitation in what is called 'Strong research and innovation milieus'. A broader innovation policy will also make it more feasible to identify in which areas of each of the prioritised sectors it will be realistic to achieve a successful diversified specialisation, that will become internationally competitive in areas different from Kuwait's competitors. In order to design this as an overall strategy to be implemented as an innovation and industrial policy for economic diversification there needs to be a ministry or public agency, such as VINNOVA in Sweden, responsible for orchestrating and overseeing such a process and improving the connectivity between the elements of the innovation system and promote a better cooperation between the stakeholders in the system as well as to strengthen the focus on innovation. We shall now turn to the two C's, 'connectivity' and 'cooperation', in the coming sections, but also coming back to these shortcomings in the section of the final C, 'coordination'.

## **5.2 Connectivity**

As has been documented so far in the report is that many of the important elements of an innovation system are in place in Kuwait but that the linking or connectivity between the elements of the system often seems to be too weak. To improve this requires partly the introduction of an integrated and coherent STI policy and partly the formation of a national innovation system, which is precisely what the Kuwait research review panel recommended already back in 2007. The view that an improved connectivity between the most important STI stakeholders, the government, universities and industry (the 'Triple Helix'), would strengthen the innovativeness and competitiveness of a country, which, thus, can be promoted by a pro-active innovation policy, is the bearing idea behind the 'innovation system approach'. The best examples of this is VINNOVA's centre of expertise programs, such as VINNEXcellence, which aim at building 'strong R&I milieus' during a ten years period.

This corresponds to an understanding of innovation systems in the narrow way, i.e. the interaction of the two subsystem of explorative organisations (universities etc.) and

exploitative organisations (firms). Thus, an innovation system understood in this way is constituted by: (i) organisations generating knowledge (universities), (ii) organisations using knowledge for innovation (firms), and (iii) the mechanisms/structures/relationships that secure the transformation of knowledge (exploration) into innovations (exploitation) in a systemic (and long-term) way. All these three dimensions have to be present to talk about an innovation system.

Consequently, not all countries have an innovation system policy. Among the Nordic countries, e.g. Denmark had for many years only a science and technology policy, then in 2012 for the first time an innovation policy was introduced but still Denmark does not have an innovation systems policy such as Sweden has. EU's neither have an innovation system policy, and hardly nor an innovation policy with its still persistence on the linear model in its policy design, focusing primarily on science and technology types of policies. In the U.S., the government's Defense Advanced Research Projects Agency (DARPA) works extensively with the private sector, leading to a number of high tech spin offs that benefit the consumer markets (e.g., Apple iPhone components).

The policy need for a broad based, innovation systems policy is clearly seen in the fallacies of the EU policy to boost innovation. In addition to the Nordic countries, the entrepreneurial states of East Asia (Japan (in the 1980s and 1990s), Taiwan and South Korea) represent an interesting contrast to EU's still dominating R&D based innovation policy (the linear model). These countries have been very successful in modernising and diversifying their economies by pursuing a policy of promoting sectors of short technology cycles, which primarily are based on applied, engineering research (i.e. synthetic knowledge base). Thus, the crucial or challenging question is what kind of agency, institutions and network dynamics enables and promotes the transformation of research into innovation, and what kind of balance between basic (curiosity driven/strategic) and applied research (i.e. between analytical and synthetic knowledge) is the optimal one for individual countries, or - in other words - how should the 'exploration- exploitation 'puzzle' be organised. Here innovation systems - providing the connectivity between the key elements of the STI ecosystem, are a logical response.

Finally, and more basically, the capacity of the infrastructure, especially for ICT use, is of key importance for a securing a high level of connectivity. While the mobile phone network is

excellent, the same cannot be said for the internet system, which is not up to date. This has a negative impact on many aspects of business life in Kuwait, and, thus, has to be improved.

### **5.3 Cooperation**

The innovation system perspective has contributed to extending the definition of innovation from the traditional linear view of starting with research and ending up with new products to a view of innovation as interactive learning, which implies that all industries and sectors can be innovative, i.e. not only R&D intensive, high tech firms and sectors but also medium and low tech firms and sectors implying that innovation is not equal to but instead more than R&D intensity. The strategic role played by cooperation in a knowledge economy is underlined by the understanding of interactive learning as a fundamental aspect of the process of innovation, which implies that efficient cooperation results in an increased innovation capacity of firms and countries. This broader understanding of innovation as a social, non-linear and interactive learning process puts new emphasis on the role played by socio-cultural and institutional structures in economic development as necessary prerequisites for firms and countries to be innovative and competitive in a globalising economy.

Thus, the formation of a national innovation system will have the potential of improving the connectivity between the strategic STI actors which will enable and facilitate a closer and more efficient cooperation between the stakeholders of the system resulting in an increased innovation capacity. This will be instrumental in securing a diversification of the economy and transforming Kuwait into a more knowledge based economy. An example of an effective national innovation system with respect to Cooperation can be found in Finland. There exists in Finland what is called the Team Finland network (of which Tekes – an innovation agency) is a part, which builds Finland's external economic relations, internationalises Finnish enterprises, and projects a favourable brand image for the country.

In Kuwait the aspects of a better and closer cooperation between the public and the private sector could be especially beneficial to carry out an innovation driven diversification policy. Such aspects will be further elaborated in the final section on 'coordination', primarily how a close public-private cooperation in the STI/innovation system policy can boost innovation, how such a cooperation within the framework of an innovation system can give the state a pro-active role in the design and implementation of innovation policies, and how the public

sector needs to be reformed to make it easier to do business in Kuwait, which is of special importance to promote entrepreneurship and SME development. In addition to these more specific aspects of public-private cooperation to enhance entrepreneurship and innovation, in general public-private partnerships (PPP) can play an important role in other fields, e.g. the building of large infrastructure projects. In Kuwait there are now examples of PPPs involving private finance in the delivery of new infrastructure and other ecosystems services which are strongly needed to support economic development.

The ability to focus on smart specialization, i.e., concentrating on areas of strength, becomes a priority area for Kuwait if the strategy of industrial clusters is to succeed. The ability to generate more agile and sophisticated institutional capacities is required because for a cluster policy to be sustainable and succeed, there will have to be a shift towards transnational hubs along with the empowerment of the triple helix model of innovation (THI), i.e., innovation stemming from cooperation between the government, industry and universities. THI is attractive because of the fact that it can create an effective research environment for technologists and incubator companies to participate, collaborate and learn, while providing infrastructural services for start-up firms to develop and expand. For Kuwait, smart specialization and a clusters' policy that is layered into various programmes of the KDP can provide the following advantages:

- Reduces transaction and procedural costs
- Allows greater specialization
- Provides opportunities for taking advantage of connected or adjacent capabilities and learning due to strategic grouping or networking of institutions and firms in a geographic proximity
- Enables measures that can result in cost savings due to sharing of common solutions to problems
- Supports the development of a common labour pool and technological capabilities, while facilitating sharing of infrastructure
- Engenders resilience in terms of quickly learning from mistakes and moving forward with the forward goals in mind

- Better collaboration helps build the platform for the sharing economy, i.e., connecting latent demand and supply, while adding value in the process

Kuwaiti policy makers should also study the possibilities of setting up economic zones in the country in which companies from other countries are encouraged to invest. Also, public procurements held in such a manner that they contribute to development of locally produced content, especially those coming from Kuwaiti SMEs, will act as a great enabler. As part of such a strategy, supplier development programmes can be part of the policy mix as such initiatives evolve. A public committee that can study how to generate better conditions for innovation in the government sector can make the government a more nimble service-provider, allowing it to gradually vacate certain operational areas that can then be transitioned onto the private sector through well-structured PPPs.

#### **5.4 Capital**

Capital is definitely not a problem in Kuwait. With one of the largest public sovereign funds in the world, The Kuwait Investment Authority (KIA), several large private investment funds, of which Markaz is the region, capital is not a scarcity. On this background the relative modest investments in R&D and higher education might look as a paradox. The Kuwait Research Review panel recommended back in 2007 public investments of 2% of GDP to the STI system, however, the country is still far from achieving this target. Given the country's industrial structure with some large companies in the resource based sector and a small but increasing number of SMEs with little capital for R&D investments, it seems logically that the public sector should compensate for this with a larger share of the R&D funding than is normally found in countries with a more diversified private sector, especially given the affluence of accessible capital in Kuwait.

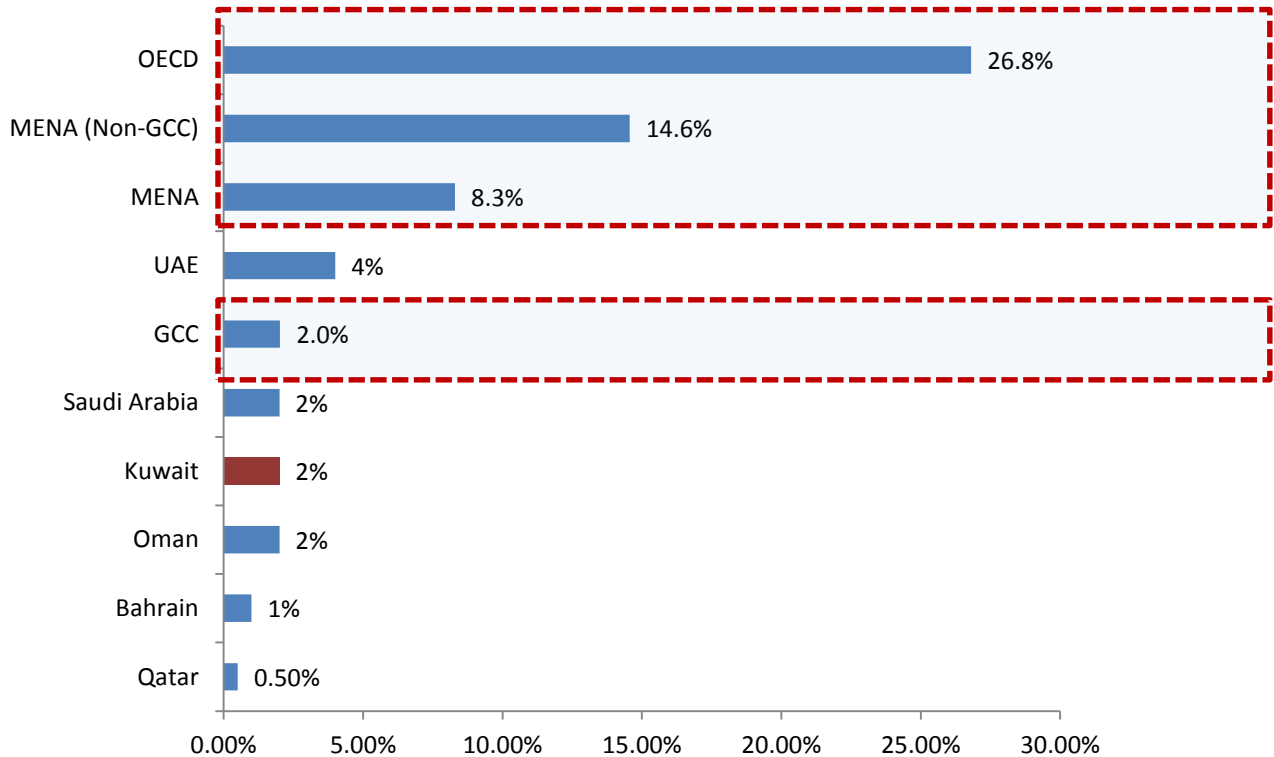
Public funding is of strategic importance especially for funding basic, curiosity driven and targeted, research as it can provide the necessary level of funding, it can be patient and be more risk taking than private capital, all factors which are important for strengthening the R&D capacity of the country. However, in making such necessary, large investments, a balanced view between exploration and exploitation should be highlighted through a trade-off between investments in long cycle (basic research on science) vs. short cycle (applied research on technology) activities. Finally, parts of an increased public spending on the STI



system might be allocated to strategic cooperation with private capital, such as KFAS, to achieve synergy effects through a public-private partnership. In Britain, an innovation funding agency called Innovate UK exists, which works with various public and private sector stakeholders to transform basic research into commercial success. For choosing effective private sector companies, funding contests are held to determine ones with the most promising chances of success.

SMEs in many countries in the Arab world have a difficult time accessing bank funding. For instance, in Kuwait, the percentage of total bank loans given to SMEs is a low 2%, only. This follows patterns in other GCC countries, Oman and Saudi Arabia; whereas in the UAE, the figure reaches 4%. The below graph depicts the share of SME Loans in total loans (%) in GCC and provides a flavor in terms of international comparative values.

**Figure 3: Low banking support for SMEs in the region**



Source: Union of Arab Banks/World Bank Financial Flagship Report 2011; International Finance Corporation; Banks and the World Bank, 2010

Also, fewer options in terms of shariah compliant products, which usually SMEs prefer, means that many SMEs find themselves excluded from the banking sector. The International Finance Corporation (IFC) reported recently that unavailability of suitable shariah compliant products is causing around 35% of SMEs in the MENA region to be excluded from the formal banking sector. The IFC study was conducted in nine countries and the results revealed that of the 36% of banks in the MENA (sample) area that offer SME products, just 17% offer Islamic options. However, there is internal regional variance in terms of demand, with KSA experiencing customer demand as high as 90% for Islamic banking, while it is just 4% in Lebanon.

Innovative financing solutions are the need of the hour, for which Kuwait may have to pick upon a number of trends from around the world. An emerging concept in terms of SMEs funding is the growing phenomenon of crowdfunding or peer-to-peer lending in Europe. Crowdfunding is a form of alternative finance for SMEs, which helps in bringing together

individual savers or lenders on common online platforms with borrowers. Those SMEs that want to borrow are matched on an optimum profile basis with interested lenders. It is notable that conventional banks and credit companies are kept out of the equation, which helps in driving down the cost of the lending transactions.

A crowdfunding model for SMEs that exchanges equity for investments is likely to quickly spread across the Mena region, given the funding gap prevalent in the region. An example of this genre comes once again from Egypt, through a crowdfunding platform called Sharquity. The platform enables entrepreneurs to assemble the required funding needed for their ventures, by allowing investors to locate opportunities to take part in. Investments could start from as little as Egyptian Pound (E£) 500. In return, investors can get equity in the companies invested. Meanwhile, experts who offer their services to the company (like design, mentorship, etc.) can gain stocks. The following infographic from Sharquity can help one understand the steps involved in crowdfunding for SMEs.

**Figure 4: Investing in SMEs through Crowdfunding Platforms**



Image Source: Sharquity

Worldover, there are several novel methodologies being devised and experimented with respect to funding for SMEs. Apart from crowdfunding, there is also the concept of peer-to-peer company lending. For instance, the French parliament is debating what is called the Loi Macron bill, which would allow companies to loan directly to one another. Also, in many countries in Europe, the practice of securitising loans to SMEs is growing, which would mean that a regularized authorities for enabling trading in them will be required over time, similar to stock exchanges. The establishment of Islamic equity funds for SMEs will also likely gather pace.

The Fund of Funds (FoF) model of funding can also be considered. An international example is that of the Polish Growth Fund of Funds (PGFF), which is a €90 million FoF initiative launched in April 2013 by the European Investment Fund (EIF) in close co-operation with Bank Gospodarstwa Krajowego (BGK). The step was taken to inject equity investments into growth-focused companies, particularly SMEs, in Poland. Under the FoF approach, a variety of eligible fund managers, across a five-year-investment period, can receive resources from PGFF in order to be invested into growth companies.

## 5.5 Competence

Competence is the single most important factor to promote innovation. The level of absorptive capacity of individuals is of significant importance for firms and society to differentiate and upgrade their economic activities to become more knowledge intensive. Absorptive capacity is enlarged through higher levels of human capital (i.e. more and better education and training) as well as by larger investments in R&D by firms and societies. Firms need higher absorptive capacity to search for, access, and exploit external knowledge and to combine and integrate it with internal knowledge generated through firms' own R&D activity. Thus, increased investments in research, education, training and competence building are of strategic importance to succeed in diversifying Kuwait's economy into a knowledge based economy. This is also acknowledged in the concluding section of the report on the Dubai Government Summit 2015 (Marmore Research, Kuwait, 2015), which maintains that 'a very important lesson for Kuwait is for the programme of sustainable economic diversification to succeed, investing in the success of its people is at the very top of the strategic agenda', Marmore Research, Kuwait 2015.

According to this report 'reform of education lie at the heart of seeding future success' (p. 1). As pointed out above the relatively low level of funding of higher education and especially R&D may seem a bit surprising given Kuwait's access of capital. As also noted, already in 2007 the Report of the Kuwait research Panel recommended that over the course of the next ten years the R&D investments should raise close to 2% of GDP, something which eight years later still is far from being achieved. In the report on Kuwait Citizen budget it is maintained that 'spending on items like national education, health and infrastructure are not separate from the national agenda of economic diversification and FDI attraction .... (and that) .... without robust educational reforms, Kuwait cannot produce the workforce necessary to steer its private sector'.

In the context of the latter point, introducing entrepreneurship and innovation as topics in the curriculum right from primary school could potentially have large, positive impacts on creating a knowledge based, innovative economy by making school children aware of the strategic importance of these topics at an early stage. In spite of the government still spending a considerable amount of money on the educational sector, the sector continues to face a

number of challenges (Al Sabah, 2013). According to the Kuwait report on competition, referred to in Al Sabah's book (pp. 138-139), restructuring of the educational system to improve the quality' of the human capital resources remain an important element of general economic policies. Of proposed mechanisms and initiatives explicitly mentioned are: 1) Improve the quality of education; 2) raise percentage of primary school enrolment; 3) improve the internal competency of the educational system; 4) improve the quality of the teaching staff; 5) improve the external competency of the educational system; and 6) increase the role of the private sector in education and training. In two reports from Marmore Research (2015) on 'Kuwait citizen budget and 'Kuwait reforms - education' the following problem areas are listed:

- Outdated curricula
- Weak vocational training capabilities
- Poor teaching techniques
- Existence of poor teacher recruitment practices
- Fee capping in private schools
- Low parental involvement in student outcomes
- Lack of emphasis on soft skills and character development
- Students graduating with little employability quotient

To add to these lists the report of the Kuwait research Panel put forward a proposal of developing a training and mentoring program for young Kuwaiti researchers. Thus, there still seems to be many challenges and demanding tasks to attain to in the educational system that will require increased investment of especially public money.

In the STI system universities play a key role both with respect to producing human capital, which still by far is the most important mission of universities (especially with respect to the increasing importance of absorptive capacity), and as arenas for primarily basic, curiosity driven and targeted, research. More and more an increased attention has been directed to the research activities of universities, and not the least towards the economic usefulness of the scientific output and results for innovation and competitiveness of firms and countries, which of course is a result of the development of an increasingly knowledge intensive global economy.

Kuwait University is the leading institution of higher education in Kuwait, and is publicly funded. It has traditionally primarily been a teaching institution due to a low level of research funding and a high teaching load among its staff. In the report of the Kuwait research Panel from 2007 several obstacles were pointed at which needed to be removed to improve the research capacity of the university. Today, many of these problems seem to be solved:

The university has developed a R&D strategy with a vision and mission stating that it should become a top research institute in the region contributing to economic growth and development allowing for strategic planning focusing the research on national priorities. The research strengths of the university are found in the nationally prioritized areas of science, medicine, and engineering and petroleum. The university has established linkages with other research organisations, e.g. an agreement was signed with KISR in 2013 for sharing knowledge in addressing national priorities. Collaboration with industry has been strengthened and increased including a stronger focus on technology transfer activities. Research funding has been improved. It is though noticeable that a majority of research projects are internally, university funded. To improve research quality it might be an idea also to increase the level of external competitive funding. Better incentives and the removal of barriers for faculty participation in research seem to have been established.

An international example of effective competence building comes from Germany. The German vocational education and training (VET) system mixes education in vocational schools and practical work experience in firms where training takes place. For German companies, this system is a key source of skilled labor. For young Germans, the VET provides the basis for a successful and confident start into working life. Overall, low unemployment is maintained due to the VET system.

Thus, even if Kuwait University still is a way from realizing the ambition of becoming a top research university in the region, it seems to be on the right track. One remaining structural problem is, however, the very low number of PhD programs. The reason for this was said to be lack of sufficient qualified staff, and the priority of increasing the staff's research activity. However, this could be solved by recruiting a sufficient number of internationally highly talented researchers. To train enough highly skilled people as well as to strengthen the research capacity of the university, as PhD students constitute a large research capacity at a

university, increasing the number of PhD programs and students should be highly prioritised. Only educating Kuwaiti nationals abroad at leading international universities is not sufficient, as the number of such PhD graduates will be too limited, which cannot be compensated only by a potential higher quality of the graduates.

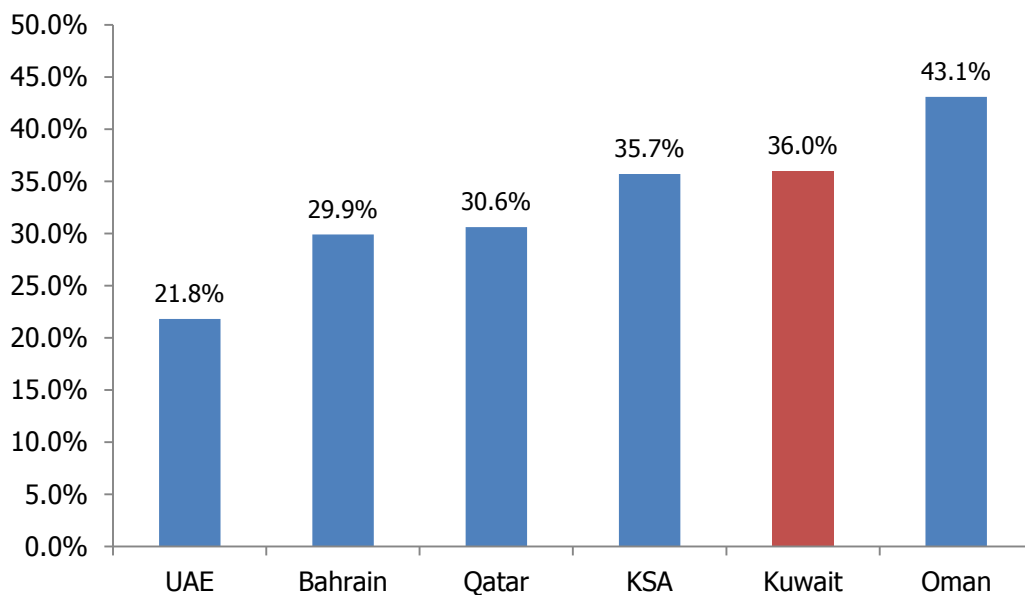
Arguably, an efficient knowledge economy is based on innovation systems with a high degree of openness and diversity, not only concerning knowledge strictly defined, but also with respect to tolerance towards the cultural, religious and ethnic characteristics of the carriers (e.g. entrepreneurs and researchers) of that knowledge. Thus, relaxing what the Kuwait Research Panel report calls 'the Kuwaitization policy' (which is referred to in the following section) to permit the recruitment of a sufficient number of internationally highly talented researchers and entrepreneurs to staff the HEIs and research institutes (KISR) and to boost the private economy might in this context be very productive. It is generally accepted that successful recruitment of global talents is of strategic importance for all countries with a knowledge based economy to remain innovative and internationally competitive (Melander et al., 2014). Thus, it becomes important to 'provide a conducive environment to attract and retain the best qualified Kuwaiti and non-Kuwaiti researchers' (Kuwait Research Panel report, 2007).

Deriving the best value for government spending is becoming an increasingly important topic in Kuwait. In the first nine months of FY 2014/15, which ended in December 2014, government spending registered a YoY growth of 9.6% to reach KD 10.6 billion in comparison with the spending for the parallel period over the previous fiscal (KUNA). The growth in spending was despite the fact that oil revenues were down by 13% due to lower oil prices and reduced production, during the period. Despite high levels of government spending on various items like education, health and public sector wages, Kuwait only stands at an overall rank of 40 out of 144 countries in the World Economic Forum's Global Competitiveness Index (GCI 2014/15). A rank of 40 among 144 countries may not appear that very poor unless seen in the context that the GCI provides several sub-rankings, as well, across 12 different pillars. Within the first pillar, which is Institutions, there is a sub-index called Wastefulness of government spending. In that metric, Kuwait ranks at the 92nd position among the 144 countries.



It is staggering that while GCC peers, Qatar and the UAE, rank one and two globally, Kuwait comes at a very distant 92nd spot, easily taking the position of registering the worst ranking among the GCC countries with respect to efficient management of government spending. In fact, all the GCC countries fall within the top 20. This state of affairs is stark given the fact that Kuwait registers the second highest percentage figure, in the GCC, with respect to government expenditure as a percentage of GDP.

**Figure 5: Government Expenditure as a % of GDP, 2015**



Source: 2015 Index of Economic Freedom, the Heritage Foundation in partnership with the Wall Street Journal

It is clear that Kuwait has to undertake a reforms process with respect to how the expenditure dollars are getting converted into tangible and real-value impact for the citizens. A failure to do so will endanger Kuwait's long-term competitiveness. Over the past few fiscals, Kuwait has spent big money in terms of health, education and infrastructure. However, the lack of results on the ground is bound to raise questions over competitiveness.

## 5.6 Coordination

To reach the goals of diversifying Kuwait's economy into a knowledge based economy, 'institutional reforms and cultural change' need to take place according to the Report of the Kuwait Research Review Panel from 2007 (see also the report on 'Kuwait citizen budget',

Marmore Research, 2015). Among such reforms, to develop a more efficient, less bureaucratic and more transparent government and governance system, including a modernised legal framework through regulatory reforms, are instrumental, to create more openness to improve the business climate (e.g. making it easier to start new business). The quality of institutions governing the reform process will have a vital say in how the reforms' environment and implementation shapes up.

Part of the problem of the inefficient bureaucracy is due to the privileges given to the Kuwaiti indigenous population of life-long employment with high salaries in the public sector. This traditional policy explains why such a large share of the population works in the public sector. As it is extremely difficult, or probably impossible, to do anything with this in a short term perspective, a gradual process of organisational and institutional innovations has to be designed and implemented. In such a process it will become necessary to look at how to make the bureaucracy leaner and more efficient at the one hand and the question of life-long employment at the other as separate problems. This means that with a slower growth of the public sector, people that cannot be offered employment in the public sector in the future, still could keep their salary, even if they are temporary idle due to lack of relevant work to be allocated to them. This would in a middle term perspective probably be cheaper for the overall economy. In the longer term perspective incentives in combination with further education and training have to be developed to channel most of these people into the private sector either as entrepreneurs or employees with sought after high skills.

The Kuwait Research Panel report recommends the establishment of a high-level 'Kuwait Science, Technology and Innovation Council' (KSTIC) to develop a National STI policy and strategy (KSTIP). It would be recommendable if such a national policy and strategy used an innovation system approach as a point of departure to secure a balance between exploration and exploitation as well as facilitating a close private-public cooperation. Moreover, the establishment of an operational governmental agency, e.g. a reformed KISR using VINNOVA as an example, would also be beneficial to coordinate the STI/innovation system policy and be responsible for designing and implementing concrete innovation strategies and policies and to enable more public-private co-funding (e.g. with KFAS) and cooperation with industry to promote innovation and economic diversification.

Such organisational and institutional innovations in the governance of the the STI/innovation system, which are in line with an innovation system perspective, would contribute 'to constructive transformative trends in the domain of government-led innovation' as pioneered by the UAE (see the report on Dubai Government Summit, Marmore Research, Kuwait 2015). According to this report the UAE government is 'driving the message that governments are key stakeholder in boosting innovation in societies' (p. 1), thus, seeing government as a dynamic player in promoting innovation (as a 'change agent'). Such a pro-active role of government would be comparable to the practice in Sweden and other Nordic countries as well as of the entrepreneurial states of East Asia. According to the report on Kuwait budget 2015/16 a number of areas are in need of policy interventions such as education, ICT, and finance (Marmore Research, 2015).

In Qatar, the Qatari SMEs development agency, Enterprise Qatar (EQ), partnered with Thomson-Reuters to launch a portal called BusinessPulse.qa, which aims to make available a comprehensive set of databases that contain valuable information and knowledge to support SMEs, apart from helping various Qatari government departments, the business community and entrepreneurs to make informed decisions. For example, one section in BusinessPulse.qa, among many others, is the 'Knowledge Centre', which hosts an exhaustive database populated with needed knowledge for investors, entrepreneurs and Qatari SMEs. Qatar National Bank (QNB), as the first official sponsor of the business pulse portal, is set to offer Qatari entrepreneurs and SMEs with access to financial support through the portal.

However, in addition to changing the government's role in promoting innovation, the most important policy objective of the Kuwait Government should be to ease the process of setting up business for entrepreneurs (Kuwait Budget 2015/16, Marmore Research, 2015). As referred to earlier Kuwait is ranked as No. 150 - the lowest of the GCC countries - with respect to starting a business in the World Banks ranking from 2014-2015 (Markaz Research, 2014). In the report on 'Kuwait - Starting Business' it is argued that 'the government's vision for reform is constrained by social factors, as the public sector employs more than 80% of the national population. Any attempts at reforms may involve reorganization and restructuring to remove redundancies, which may affect the workforce' (Kuwait - Starting Business, Marmore Research, 2015, p. 7). In the World Economic Forum's 'Global Competitive Report 2015'

'inefficient government and bureaucracy' is mentioned as the most problematic factor for doing business in Kuwait, followed by restrictive labour regulation, corruption, access to financing, policy instability, inadequately educated workforce, and inadequate supply of infrastructure.

By the establishment of the Kuwait Direct Investment Promotion Authority (KDIPA) in 2013, Kuwait has taken important steps in improving Kuwait as an international investor friendly and open economy. This becomes increasingly important to facilitate a higher level of technology transfer through FDIs and/or joint ventures to secure a better access to foreign knowledge and technology of potentially increasing importance for the diversification of the economy of Kuwait (Kuwait - Starting Business, Marmore Research, 2015).

In a globalised knowledge economy the importance of globally distributed knowledge networks has increased dramatically over the last decade. This is not the least important to acknowledge for a small and open economy as the one of Kuwait in proceeding to diversifying its economy.

## 6. Some International Policy Examples

Innovation requires a complete ecosystem to thrive. In order to address the main barriers to innovation, several players and actors have to come together in a coordinated sequence of action, learning and refining. It would be useful at this stage to distil the key barriers to innovation.

**Table 13: Barriers to Innovation**

Barrier	Description
Knowledge	Absorptive capacity, intellectual property, user knowledge, lack of communication, lack of information
Access to Capital	Availability of finance, cost of finance
Incentives	Lack of competition, lack of inducements, lack of ambition
Markets	Identifying opportunities, understanding opportunities, regulation, standardisation, access to markets, and language barriers
Skills	Lack of Leadership, technological, R&D and creative thinking skills
Cultural Changes	Risk aversion, low levels of entrepreneurship, lack of understanding innovation, managing change reluctance to collaborate

Source: Northern Ireland Innovation Strategy Team (verbatim)

**Figure 6: Innovation Ecosystem Key Players**

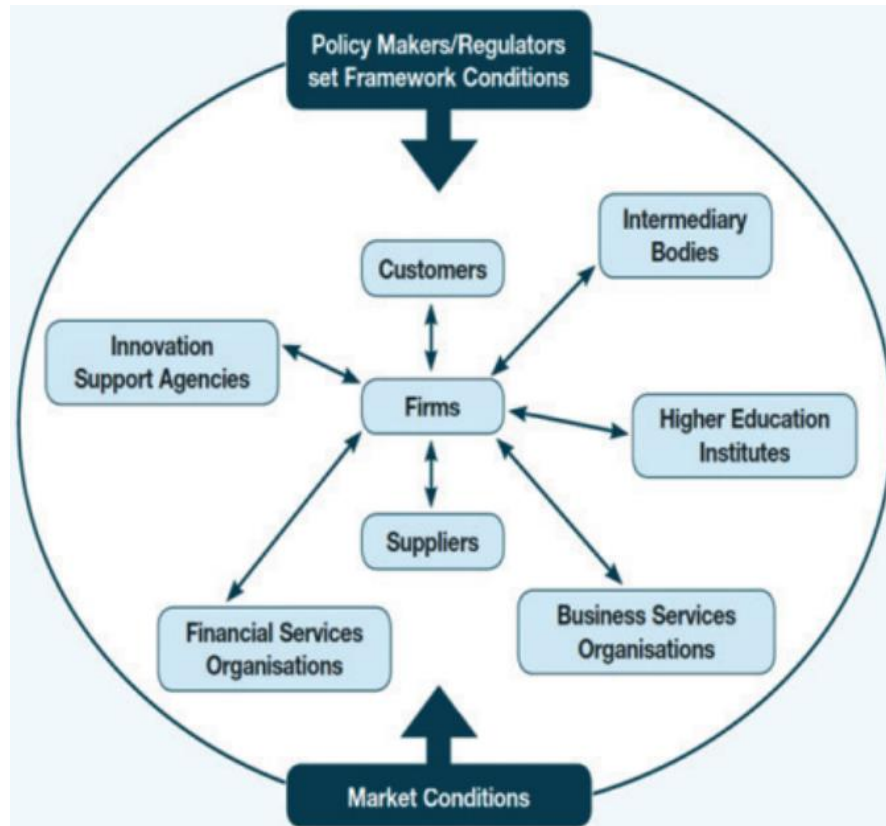


Image Source: InterTradeIreland (2012) 'Leveraging the Innovation Ecosystem for Business Advantage: A Cross Border Study

Innovation ecosystems are complex and failing to account for the complexity can create conditions of market failures. It is essential to identify the interests of different actors and provide space for each to perform their role, so that the entire value chain is incentivized and well provisioned with necessary resources. In that regard, it would be useful to study some international policy examples.

The government of Singapore has introduced a strategic initiative called SkillsFuture, which is aligned with the country's commitment to boost innovation for powering the next wave of economic growth. The SkillsFuture programme contains a provision called the SkillsFuture Credit for all citizens aged 25 and above. Citizens can use the SkillsFuture Credit, with the initial credit value being \$500, to deepen their skills through taking part in learning and

training programmes. The credits do not have an expiry date, but can only be utilized for training and educational programmes, and should be seen as a government provided financial measure for offsetting course fees. It is expected that over two million Singaporean citizens will receive the SkillsFuture Credit in 2016.

As part of the SkillsFuture package, there is another programme called the SkillsFuture Earn and Learn Programme. This programme is a work-study programme that aims to give fresh graduates from Singaporean polytechnics and the Institute of Technical Education (ITE) a confident start in careers related to their fields of study. It offers the Singaporean students with more opportunities to practically take forward the skills and knowledge they acquired during the formal educational period, and to support better their transition into the competitive workforce. It is notable that the SkillsFuture Earn-and-Learn Programme is created in collaboration with industry in order to ensure employability of the students in terms of the employers' perspectives.

In 2015, Nesta (a British charity), along with Accenture and Future Cities Catapult (a U.K. based urban innovation centre), released a evidence-based policy perspective under the title of the CITIE (City Initiatives for Technology, Innovation and Entrepreneurship) initiative. The CITIE is described as a resource to support city governments in developing policies to support innovation and entrepreneurship. The CITIE framework is divided into three broad dimensions or themes that provide an overarching narrative for an urban location's activities across nine key policy areas.

**Figure 7: The CITIE framework**



Source: Nesta, Accenture, Catapult Future Cities

The following table describes items that are actually considered under various measures that nest within the three dimensions.



**Table 14: Barriers to Innovation**

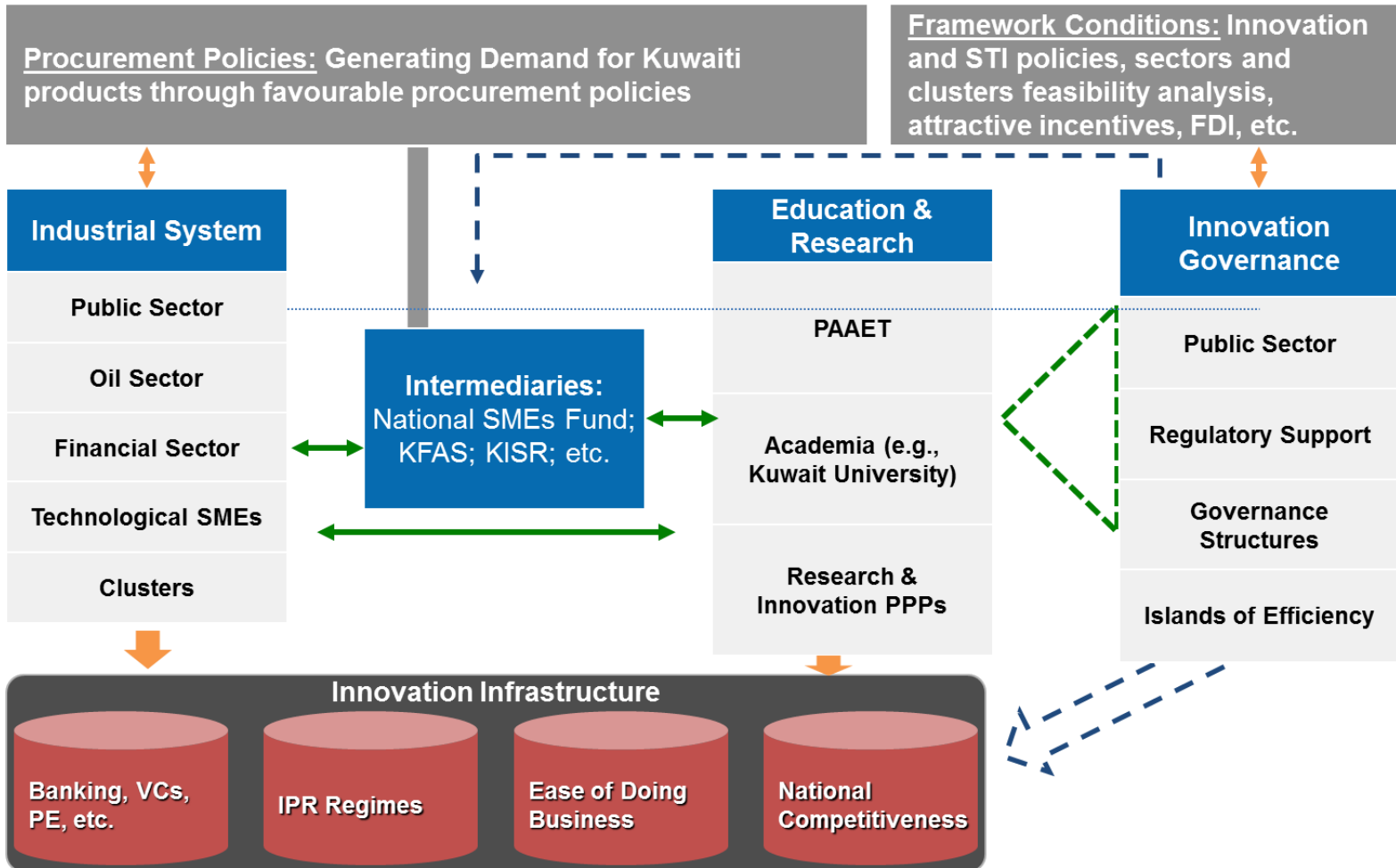
Dimension	Measure	Description
Openness	Regulator	Does the city regulate in a way that encourages innovation within a balanced competition policy agenda?
	Advocate	Does the city promote itself and its small business community to the outside world?
	Customer	Is procurement accessible to small businesses, and does it actively seek out innovation?
Infrastructure	Host	Does the city use space to create opportunities for high growth companies?
	Investor	How does the city invest in the skills and businesses required for innovation?
	Connector	How does the city facilitate physical and digital connectivity?
Leadership	Strategist	Has the city built the internal capabilities required to support innovation?
	Digital Governor	Does the city use digital channels to foster high-quality low-friction engagement with citizens?
	Datavore	Does the city use data to optimise services and provide the raw material for innovation?

Source: Nesta, Accenture, Catapult Future Cities (Verbatim)

The above approach can be developed into an effective benchmarking tool in terms of rating urban locations and finding out areas for improvement and policy interventions.

## 7. Action Road Map and Conclusions

**Figure 8: Mapping the Kuwait Innovation Ecosystem**



Note: Inspired from Kuhlmann and Arnold (2001: 2)

<b>Action Item 1</b>	<b>Clusters Identification (Sectors and Locations)</b>
<b>Rationale</b>	Based on a PPP model, stakeholders like Kuwait University, private sector and government agencies (like KDIPA and SME Fund) can collaborate in research to find clusters that have the best chance for growth in Kuwait. Also, the best locations for each sectorially based theme should be identified. For e.g., Kuwait City for digital entrepreneurship; Southern Kuwait for automotive; etc.
<b>Stakeholder(s)</b>	Kuwait University (for knowledge leadership and contacts); private sector (for consulting support and international private sector linkages); and SME Fund (for institutional backing and expertise).
<b>Expected Outcome(s)</b>	<ul style="list-style-type: none"> <li>• Creating new innovation based clusters to foster knowledge economy</li> <li>• Revamping and regulating existing clusters</li> <li>• Creating KPIs for the related stakeholders to ensure targets are met</li> </ul>

An economic cluster (or in this case `cluster`), is a geographic concentration of business which are connected in nature across the value chain such as suppliers, contractors, producers etc. A classic example of a successful technology cluster is the Silicon Valley in California (USA). Detroit's (USA) auto industries and London's (UK) financial sector are other examples of global successful clusters. Closer home, the UAE's practice of clustering or grouping manufacturing facilities in sectors of high commercial and scientific value has proved to be a trendsetter. For e.g., Dubai's Technology and Media Free Zone was set up in 2003 and within five years, hosted the regional offices of major broadcasting companies such as BBC, Reuters, etc . It appears that Qatar is the one closely trying to stimulate this model, though with a tinge of quality educational refinement along with the commercial angle that Dubai (UAE) so clearly

focuses upon. JAFZA (the UAE) alone has about 7,100 companies, including 800 American firms.

The first parameter in the Six Cs framework (section 3.1) deals with Concentration, which is essentially about targeting and prioritisation of investment efforts. In other words, entrepreneurial and innovation efforts will have to build on what already exists. According to research from the UK (NESTA), it is quite difficult to build clusters from scratch. Better still is an approach of any latent clusters that could benefit from awareness-raising and networking them to the necessary kind of support. Increasing visibility and reach can go a long way in helping latent or 'hidden' clusters take off.

The Six C aspect of Concentration means that clusters have to be classified and developed in a systematic way, ideally via the creation of a formal cluster set up. International best practices reveal that successful clusters need scale (starting out at 20 enterprises and usually operating with a cap of 100), a full-time chief executive officer and possess a radius of up to 90 minutes' commute time for participating businesses<sup>3</sup>. Operating on such numerical best practice parameters can help bring about critical mass. Critical mass can prove crucial in terms of obtaining some of the positive spillovers connected to clusters as it increases the reach and breadth of the network. The above stakeholders have been suggested based on the thought that without a well-structured process to identify relevant clusters and locations for housing them, the risks associated with developing them cannot be reduced.

Kuwait University (KU) has expertise across a number of specialist subject areas and has the ability to call up a roster of expert contacts and international linkages, if needed. This can be linked with private sector research expertise. Thus, the twinning of expert subject matter expertise, international experts (courtesy KU) and robust private sector analytics can help in uncovering clear locations and business clusters.

A PPP model would best work for this initiative, given the need to couple the resources of the public sector with the dynamism that the private sector can provide. Also, a PPP vehicle can support public sector strategies to improve internal governance on a more urgent basis. A study on existing and potential clusters could be initiated by the SME Fund based on which

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<sup>3</sup> The Irish Times

formal clusters could be formed with the help from the public sector. Various existing & potential SMEs on technology can be identified and brought together in the form of a cluster by providing the necessary funding, infrastructure and mentoring.

Developing formal clusters would aid greatly in fostering the knowledge economy by encouraging various types of innovations across sectors. The existing unorganized and unregulated clusters would benefit by gaining access to funding and infrastructure. Assigning relevant quantifiable KPIs to the various stakeholders responsible for the creation of clusters would result in ensuring that the task is completed. However, it is important to have periodic reviews of such KPIs for efficient governance.

<b>Action Item 2</b>	<b>Government Procurement Policies vis-à-vis Kuwaiti SMEs</b>
<b>Rationale</b>	Establishing and enforcing procurement guidelines in terms of government procurement will encourage, support and develop Kuwaiti SMEs
<b>Stakeholder(s)</b>	Ministry of Finance; Ministry of Commerce and Industry; SME Fund
<b>Expected Outcome(s)</b>	Creation of an SMEs ecosystem around government consumption in Kuwait. Will help develop expertise among SMEs, which can be used later on to capture overseas business opportunities, also. It will also help in fostering innovation wherein new product/service ideas would have a ready market.

For SMEs, bidding for government business contracts can be incredibly complicated and expensive. In Kuwait, new regulations are required that can create a huge opportunity for Kuwaiti SMEs in terms of tapping government procurement. The bidding process should be rendered simpler and transparent in order to allow more SMEs to approach government business opportunities with more confidence. Conscious efforts towards including SMEs in the government procurement supply chain have allowed 26.1% of the U.K. government's spend to go to British SMEs during the period 2013 to 2014<sup>4</sup>. The British government has launched a website ([www.gov.uk/contracts-finder](http://www.gov.uk/contracts-finder)) that will allow British SMEs to search for government business opportunities in the U.K by location. Such innovative measures to support Kuwaiti SMEs in terms of accessing government procurement are needed in Kuwait too.

Also, supportive procurement laws like that enacted in the UAE could be adopted for Kuwait. In 2014, the UAE announced Federal Law No 2 of 2014, as part of which UAE federal

<sup>4</sup> Gov.uk

authorities and ministries are mandated to contract at least 10% of their procurement for purchasing, servicing and consulting to Emirati SMEs. In the UK, the procurement policy of the nation calls upon central government procurement to consist of contracts going to British SMEs to the tune of at least 25%. Kuwait should begin the process of debating what the quota target should be in terms of government procurement from Kuwaiti SMEs.

While developing policies for supporting Kuwaiti SMEs in tapping government procurement, special care has to be given to modalities around payment, as SMEs cannot sustain long periods without regular cash flows. For e.g., according to the revamped British regulations in terms of SMEs and government procurement, every stakeholder in the supply chain must comply with 30 day payment terms with respect to SMEs, including suppliers and sub-contractors. According to a research report by the Asian Development Bank (ADB), the U.S. “[...] approach covers small business, small disadvantaged business (i.e. owned by historically disadvantaged individuals), veteran- and women-owned small business and other categories. The program essentially targets US-based individuals and enterprises that contribute to the US economy through payment of taxes and use of US materials, labor and services.”

For public procurement to have a beneficial impact on Kuwaiti SMEs, the thought culture will need to shift from one solely focused on short term costs to one that takes an approach that includes social and national strategic (economic diversification) considerations. Since a government’s procurement policy is first and foremost a series of political decisions regarding government services and the means to render them, political factors are an integral part of public procurement policies. Also, on the lines of the Swedish model, the Kuwaiti government could introduce public procurement of innovation, i.e. procurement that includes R&D. For instance, clear incentives can be provided to procuring public authorities by mandating that 1% of the total quantum of procurements should be allocated to innovation procurements that come from ongoing R&D.

The main stakeholders are the Ministry of Finance; Ministry of Commerce and Industry and the SME Fund. The Ministry of Finance will have to combine budgetary plans with commercial and planning policies of the Ministry of Commerce and Industry. Even as the Ministry of Commerce and Industry takes important calls on optimum procurement, requisite data and analysis can be sourced from the SME Fund’s research portal.

Framing procurement policies would help in creating an SME ecosystem which revolves around consumption by the public sector companies. Procurement policies would greatly aid in encouraging innovation in the SME ecosystem. Innovative ideas or new products/service would have a ready market in the form of procurement policies. This would help in reaching out to overseas markets thus increasing exports.



<b>Action Item 3</b>	<b>Bilateral STI-agreement with centres of innovation excellence starting with Finland</b>
<b>Rationale</b>	In a series of such partnerships, Kuwait could start with Finland, a renowned innovation leader, in terms of joint thematic research, which would allow Kuwait to further hone its STI policies through interactions with known innovation champions.
<b>Stakeholder(s)</b>	KDIPA; Ministry of Commerce and Industry; Kuwait Chamber of Commerce & Industry, SME Fund.
<b>Expected Outcome(s)</b>	Kuwaiti researchers and entrepreneurs can bring new ideas, research, funding opportunities and international market insights into Kuwait. This would greatly increase the chances of success in terms of creating value around the 'Made in Kuwait' brand.

In the EU (European Union), which has a global reputation for innovation, the innovation leaders are Sweden, Germany, Denmark and Finland, with Finland getting increasing attention for its innovation and economic diplomacy policies. The Finnish Funding Agency for Innovation (Tekes) forms the centerpiece of an agglomeration of business accelerators (based on a PPP model) that function in every key area of business and offer promising high-growth companies with mentorship and counselling from experienced businesspeople and angel investors. As part of its economic diplomacy efforts, Finland has pioneered STI collaborations with partner countries, such as United States, Japan and EU, as part of science diplomacy, a subset of its economic diplomacy policy<sup>5</sup>.

Finland prefers bilateral STI-agreements that provide potential for further development from being just basic agreements to more active co-operation and coordination platforms. Such agreements usually facilitate longer-term bilateral co-operation based on joint thematic activities (e.g., neurobiology). By gaining opportunities to partner with established and leading innovation players like Tekes, the Kuwaiti innovation ecosystem will benefit from information

<sup>5</sup> TEKES, Finland

gathering and network building that can go a long way in supporting thematic innovation campaigns that suit the Kuwaiti innovation ecosystem. Finland views such agreements as an excellent platform for several of its agencies, researchers and businesses to showcase their potential and thereby earn export opportunities.

The EU has evolved several programmes like FP7 (7<sup>th</sup> Framework Programme for Research and Technological Development) in order to create European jobs, expand competitiveness across the 28 member EU nations, and for sustaining leadership in terms of the global knowledge economy. By partnering with a nation like Finland, a key innovation and research member in the EU, Kuwait will have access to tacit and tangible knowledge and expertise, which can feed into the creation of more robust innovation policies in Kuwait over time. The networks and contacts gained from the relationship will provide Kuwait with more focused international exposure that can meet specific technological, knowledge and procurement needs. This would vitalise the scientific and technological base of the Kuwaiti industrial system.

The key stakeholders in enacting this action item are KDIPA; Ministry of Commerce and Industry (MoCI) and Kuwait Chamber of Commerce & Industry (KCICI). KDIPA can provide the relevant FDI perspective and expertise, while MoCI and KCICI can help in planning policies and implementation efforts. KDIPA can reach out to international agencies such as Tekes in Finland to ask for potential collaborations from an STI perspective. MoCI and KCICI, with the help of the SME Fund, would play a vital role in identifying existing and potential innovators in the SME space to be sent for further training and gaining expertise from an international perspective. This would aid in fostering an innovation based SME ecosystem in the economy.

The desired outcome is that Kuwait will have a strong policy and implementation framework for developing research and innovation capabilities that have the inherent requisite of catering to a global knowledge economy. Definitive products and services cannot emerge without collaborative research, both within the GCC and with external research partners from around the world. Coordinating national, regional and global teams through research networks that support better mobility of researchers' and participating businesses will unify fragmented elements of a proactive knowledge economy policy. By capitalising on the experience that Kuwait gains through intimate exposure to the EU innovation ecosystem via well-targeted

bilateral partnerships, Kuwaiti researchers and entrepreneurs can bring new ideas, research, funding opportunities and international market insights into Kuwait. This would greatly increase the chances of success in terms of creating value around the 'Made in Kuwait' brand.

<b>Action Item 4</b>	<b>'Innovation Kuwait' Portal</b>
<b>Rationale</b>	Launch a portal called 'Innovation Kuwait' that will make available comprehensive set of databases that contain valuable information and knowledge to support SMEs, apart from helping various Kuwaiti government departments, the business community and entrepreneurs to make informed decisions.
<b>Stakeholder(s)</b>	National SMEs Fund; Private sector (both in development of the portal and in offering financial solutions to SMEs through the medium of the portal). KFAS, KISR, KU
<b>Expected Outcome(s)</b>	Will act as a one stop shop for reliable information and will provide a platform for various stakeholders to interact and respond in real time, thus cutting away bureaucracy. SMEs would benefit from making the right decisions while spending on R&D to develop innovative products. They would also gain access to academic and working papers to help in new product ideas.

In partnership with strong private research stakeholders, a portal dedicated to innovation and knowledge economy can be launched. The online portal can support the strategy of building a culture of innovation and entrepreneurship in Kuwait. Essentially, the 'Innovation Kuwait' portal will provide comprehensive sets of information and databases in order to assist SMEs, government departments and the wider business community in the process of making well informed choices and decisions.

The portal will also serve as a common platform for various stakeholders to interact in real time. Moreover, the site will highlight multiple stories and experiences of entrepreneurs, thereby allowing ideas and cooperation to flow unimpeded. Serving as the main innovation and knowledge economy portal, the site should encourage key and established companies in Kuwait to register in the portal. Through such a presence, direct communications can be had with multiple SMEs, thereby aiding corporate houses to discharge responsible corporate social responsibility functions through providing valuable mentorship and networking support.

Various government departments can use the website to advertise various procurement needs, thereby allowing Kuwaiti SMEs to bid in a system of transparent information flow. The site can serve as an aggregator in terms of information on funding, legal services, export and import policies, regional and international news of interest, etc. In effect, the site will act as a one stop shop in terms of information and networking activities, thereby aiding the process of ease of doing business in the country. Thus, the 'Innovation Kuwait' portal can carve a niche for itself in terms of providing Kuwaiti SMEs with new business opportunities and a digital hosting place in the modern knowledge economy.

The key stakeholders are the Kuwait National Fund for SMEs Development and private sector players . The SME Fund can use its leverage, datasets and its access to the full range of government policies to provide the necessary information for predictive analysis and formulation into effective formats. A qualified private sector enterprise, which also has interests in financial services, can act as the intermediary for SMEs to reach out for necessary information and financing support. Agencies such as KFAS & KISR, with the help of Kuwait University (KU) can help in providing academic studies and research papers which can be taken to the next level of commercializing such knowledge thereby achieving a dual benefit of incentivizing Phd students to be more innovative and at the same time provide ideas to SMEs to develop new products/services.

Serving as a conduit for bringing together the creativity and energy of Kuwaiti entrepreneurs with grounded information and knowledge from seasoned veterans and other essential information, the 'Innovation Kuwait' portal can also act as a source of funding opportunities. For e.g., private equity players and venture capitalists can develop relationships with entrepreneurs and thus be better able to determine whether they are backing candidates that they would ideally or normally prefer. The site can house a crowdfunding centre as well, linking entrepreneurs with a wider set of investors who are looking for projects that have a personal appeal to them.

The 'Innovation Kuwait' site can also act a tool, through log-in, for members of the Kuwaiti innovation ecosystem to route concerns to relevant government departments. For instance, if an entrepreneur is facing extreme delay in terms of getting their import items released from the port, then the information can be passed to a centralised grievance addressing cell, via

the medium of the portal. Over time, the portal can even be considered for delivering e-services in support of an efficient knowledge economy. For instance, aspiring entrepreneurs could submit all required documents through the portal and after due diligence by relevant authorities, may later download their licenses through an app that the portal supports. Thus, innovative use of technology and smart applications can help in the provision of smart services.

The 'Innovation Kuwait' portal can aid in the development of an e-government services delivery roadmap in Kuwait, thereby boosting public sector efficiency and governance as well. An effective e-government requires that government agencies deliver their services in an integrated manner, via exchanging information or data and making them accessible through reliable and trustworthy channels. Thereby, citizens can complete the procedures for needed government services in electronic form, doing away with time consuming paper-based transactions in the process. Moreover, layers of bureaucracy and red tape can be peeled away as part of enhancing e-government efficiency.

The expected outcome is that the website will act as a common platform for multiple stakeholders to coordinate actions. Acting as a primary reference guide for entrepreneurs, the site can be useful in terms of preventing misinformation from seeping into strategic and operational decisions, thus saving much time, money and other resources. Such information would immensely benefit SMEs, who are currently finding it very hard to obtain quality information to structure their R&D spending. Existing studies and academic working papers can also be provided with the help of agencies such as KFAS & KISR which would help science and technology SMEs to obtain relevant information.

The portal can host market research reports and other relevant analysis, in order to bridge the research deficit that fresh entrepreneurs may face in terms of not knowing where to turn for the right information. Thereby, the gaps in participation can also be bridged by allowing all stakeholders to contribute and participate in the decision-making process with respect to inputs for developing enabling policies. The real time and interactive nature of the portal can support online discussion forums for that purpose. In effect, the portal can greatly infuse a collaborative approach in the process of building an innovation economy.

<b>Action Item 5</b>	<b>Strategic MoUs with Industrial Clusters and Free Trade Zones in the UAE and the KSA</b>
<b>Rationale</b>	Sign strategic MoUs with entities like the Ras Al Khaimah Free Trade Zone (the UAE) and Yanbu industrial city (KSA). The MoUs should be structured in such a way that Kuwaiti agencies can have a presence over a period of time in these facilities to study, analyse and understand the reasons behind the successes of these trading zones.
<b>Stakeholder(s)</b>	KDIPA; Ministry of Commerce and Industry; Kuwait Chamber of Commerce & Industry.
<b>Expected Outcome(s)</b>	Kuwait can get deeper access to functioning of successful FTZs and best practices can be adopted to develop international quality FTZs in Kuwait. This would help in bringing foreign investment and technology into the country.

A memorandum of understanding (MoU) is used to signal a framework of collaboration between two or more parties. By entering into MoUs with industrial clusters and free trade zones in the UAE and the KSA, Kuwait can have professional access to a number of best practices and strategies followed by the selected Emirati and Saudi entities.

Free zones in the UAE, such as Ras Al Khaimah (RAK), are constantly on the lookout for foreign investors. By signing MoUs with facilities like RAK, Kuwait can understand the dynamics involved in building up successful free zones. The free zone at Jebel Ali, a deep port in Dubai, is widely considered to rank among the most successful in the world. It originated as a trans-shipment port where large vessels and ships unloaded goods that smaller or feeder ships would transport to other ports around the Gulf area. Jebel Ali activated a slew of free zone type initiatives, leading to the UAE accounting for over a third of the free zones in the MENA region. Over the years, the UAE has successfully, also, refined the programme of

establishing industrial zones targeting specific sectors. The Dubai Media City is one good example.

Unlike the UAE, the Kingdom of Saudi Arabia (KSA) has been relatively less quick in adopting the concept of the FTZs. However, when the KSA did start looking seriously at setting up free zones, the policy planners decided that the existing models of just special economic zones, processing zones, etc, alone, would not suit the country's economic diversification requirements<sup>6</sup>. Thus, the model of the 'Economic Cities' was construed, positioned as a new business model that would allow nationals and skilled expatriates to function in a 'work, play and live' environment<sup>7</sup>. Moreover, the KSA Economic Cities place an emphasis on a simulator type environment for testing policy efforts to economically diversify the country. There are four economic cities in the KSA, which are envisaged for completion by around 2030<sup>8</sup>. They are –

- King Abdullah Economic City – Rabigh (near Jeddah)
- Prince Abdul Aziz bin Mousdaed Economic City – Hail
- Knowledge Economic City – close to Al Madinah
- Jazan Economic City – close to Jazan City

The key stakeholders in enacting this action item are KDIPA; Ministry of Commerce and Industry (MoCI) and Kuwait Chamber of Commerce & Industry (KCICI). KDIPA can provide clear analysis and insights into what exactly foreign entities are looking for in terms of making profitable investments in the region. This can be combined with the long-range planning support that MoCI can provide in terms of erecting a suitable regulatory framework, supported by insights from the KDIPA, in terms of setting up commercial and industrial regulations that take care of both the interests of foreign and that of Kuwait. An example is how offsets can be used as part of free trade zone or economic city clusters. Meanwhile, KCICI can provide a strong advocacy arm for both internal and overseas influence.

Also, there is a growing consensus that trade or economic zones should not be seen as a substitute for a nation's overall trade and investment reform strategy and efforts. Zones are

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<sup>6</sup> Cadre Economic Cities

<sup>7</sup> Ibid.

<sup>8</sup> 'Doing Business in Saudi Arabia' guide



only one tool in an array of mechanisms in terms of creating jobs, generating exports and improving levels of foreign investment. Thus, a key outcome is that that the zones or cities, after construction, will work on the lines of public-private partnerships in terms of creating attractive propositions for foreign companies to invest. Aimed at promoting economic diversification, they are expected to create well-paying jobs and as a training ground for generations of Kuwaiti students.

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