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Insight

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INVESTOR**

INFRASTRUCTURE RISK MANAGEMENT

Assessing and managing dynamic exogenous risks

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Contents

Figures and tables	x
About the editor	xiii
Introduction from the editor	1
By Jeffrey Altman, Finadvice AG	
Dynamic exogenous risks	2
Regulatory risk	2
Political risk	2
Social risk	3
Technological risk	4
Climatic and environmental risk	5
Economic risk	5
Catalysts of change	5
Implications of the new normal	6
Section I: Practical strategies for assessing and managing risks	7
Part 1: Political risk	
1. Mitigating political risk in infrastructure investing: A politician's perspective	9
By Ian Pearson, Former UK Minister, HM Treasury	
What political risk means to politicians	9
The changing politics of infrastructure	11
The UK model – some reflections	12
Government expectations and dealing with politicians and regulators – some useful tips	14
Bringing it together – final thoughts	16
2. A methodological approach to political risk	17
By Richard G. Little, AICP	
Introduction	17
Understanding political risk	17
Assessing political risk	18
Decision aid for management of political risk	19
Strategies for management of political risk	20
Conclusion	22

Part 2: Regulatory risk**3. A new age of regulatory austerity? 23****By Regina Finn, Lucerna Partners**

Introduction	23
It ain't broke so	23
How regulators make decisions	24
How regulation is adapting to a changing environment	26
What change means for investors, fund managers and firms	29
Final thoughts	30

4. Proactive asset management during times of regulatory uncertainty 33**By Jeffrey Altman, Finadvice AG**

Introduction	33
The current landscape	33
What's driving the shift?	36
Implications of the new normal	38
What a fund manager and its asset management team can do	38
What investors can do	39
What the industry can do	40
Conclusion	40

Part 3: Social and environmental risk**5. Social dynamite: The impact of consumer empowerment on the infrastructure sector 41****By Thomas Putter, Ancora Finance Group and Jeffrey Altman, Finadvice AG**

Introduction	41
Infrastructure industry and the consumer: A brief history	41
Catalysts of consumer empowerment	42
Case studies	43
Attributions of social backlash	45
Conclusion	46

6. Effective management of ESG risks in major infrastructure projects 47**By Mark Hoff, Jaideep Das, Sarah Murfitt and Alec Martin, ERM**

Introduction	47
Organisational culture	48
Effective stakeholder engagement	48
Characterising the nature of the project and key associated ESG issues	48
Why effective management of ESG matters and key challenges	49
Role of ESG in project delay and associated costs	50
Case study 1: Development of a coal-fired power plant in Germany	52
Case study 2: Road project in Turkey – Resettlement issues	53
Effectively managing ESG issues to maximise beneficial project outcomes	54
Conclusion	55

7. Infrastructure management and sustainability: The benefits of keeping the horse before the cart	57
By John Watt, Morgan Stanley Infrastructure	
Introduction	57
Background	57
Infrastructure and sustainability	59
Case study 1: Chicago Parking Meters	59
Case study 2: Montreal Gateway Terminals	61
Case study 3: Madrileña Red de Gas	62
Case study 4: Medical Area Total Energy Plant	64
Case study 5: Eversholt Rail Group	65
Conclusion	65
Part 4: Technological risk	
8. Technological innovation: Opportunities and threats to infrastructure	67
By Jeffrey Altman, Finadvice AG	
Reflecting on recent disruptive events	67
Innovation in the gas industry and its impact on the coal industry	68
Innovation in the electricity industry	70
Other sectors	72
Cybersecurity	73
Conclusion	73
9. Designing regulation around technological innovation: Experiences from Hawai'i	75
By Hermina M. Morita, Former Chair of the Hawai'i Public Utilities Commission	
Introduction	75
Hawai'i's electric systems and energy landscape	76
Clean energy drivers	79
Navigating transformation: Understanding and accepting a new paradigm	86
Conclusion	88
Addendum: Hawai'i's energy policy drivers and current results	88
Part 5: Assessing the implications of risk	
10. Assessing the credit implications of regulatory and political risk in infrastructure	97
By Michael Wilkins, Standard & Poor's Ratings Services	
Introduction	97
Analysing political and regulatory risk	97
Political focus on affordability	99
Affordability through tariff changes	100
Regulatory advantage	101
Public funding and credit support	101
Subsidies and renewables	102
Government antitrust action	105
Conclusion: Adapting to changes in global infrastructure markets	105

11. Infrastructure asset management: Assessing regulatory and political risk	107
By Julian M. Macey-Dare, Marsh Ltd and Stephen Kay, Marsh LLC	
Introduction	107
Infrastructure's dilemma	107
Altered landscape	108
Managing the risks	110
A project's life cycle of political risks	111
Conclusion	113
 Section II: Law and regulation: Regional overviews and analysis	 115
 12. A legal perspective of regulatory and political risk in infrastructure	 117
By James Snape, Nabarro LLP	
Introduction	117
Project-specific risks	118
Risks that impact on a sector or entire economy	120
Managing political and regulatory risk	121
Private sector mechanisms to manage political and regulatory risk	123
Conclusions	123
 13. AIFMD and infrastructure asset management	 125
By Tamasin Little, King & Wood Mallesons LLP	
Introduction	125
Authorisation – What is an AIF?	125
Fundraising	127
Depositaries	128
Asset stripping and other provisions affecting EU portfolio companies	129
Securitisations	130
Investment and management process and operational obligations	131
European Long-Term Investment Funds	134
Conclusion	134
 14. An introduction to energy and infrastructure regulation in the European Union	 137
By Silke Goldberg, Herbert Smith Freehills	
Introduction and scope	137
Unbundling	138
Regulatory oversight	141
Cooperation between transmission system operators	142
European network codes	143
Development of energy infrastructure	143
New state aid guidelines	145
Outlook	146

15. An overview of the US regulatory structure for infrastructure	147
By David Narefsky, John Schmidt and Joe Seliga, Mayer Brown LLP	
Introduction	147
The federal role: Regulation, financial support, taxation	150
Federal taxation	152
Increasing use of public-private partnerships (PPPs)	152
Conclusion: The continuing politics of US infrastructure governance	158
16. UK-regulated infrastructure: Current landscape and challenges	159
By James Wardlaw, Campbell Lutyens	
Introduction	159
Key challenges: the Government perspective	159
Key challenges: the consumer perspective	162
Key challenges: the investor perspective	162
The UK Regulators Network: Objectives	164
Conclusion	165
Appendix: Principles and Commitments for Economic Regulation	166
17. Opportunities and challenges for infrastructure investment in Asia	171
By Susan Hilliard and John Sullivan, King & Wood Mallesons LLP	
Introduction	171
Growth in demand for private investment... but challenges remain	171
Region not homogenous	172
Significant opportunities... but reform is needed	178
18. The investment opportunity in African infrastructure	179
By Cindy Valentine and Patrick Deasy, King & Wood Mallesons LLP	
Introduction	179
Political stability	180
International planning and cooperation	180
Credible legislative and regulatory frameworks	181
Capacity	181
South Africa – Renewable Energy Independent Power Producer Procurement Program	182
Nigeria – Roadmap for Power Sector Reform	183
Ports and related infrastructure	185
Uganda – Bujagali Hydroelectric Power Station	186
Investment landscape and investor activity	186
Conclusion	188
19. Infrastructure in Latin America	189
By Glenn Faass and Pablo Jaramillo, Norton Rose Fulbright	
Introduction	189
Macroeconomic changes	190
Current financing trends	195
Key risk factors	197
Conclusion	199

Section III: Case studies	201
20. A case study in regulatory risk in the Spanish renewables sector	203
By Tom Murley, HgCapital	
Prologue	203
Introduction	203
Collective action	204
International arbitration	207
Debt restructuring	208
Implications of response to regulatory changes	209
Lessons learned	211
21. Managing PV assets in Italy	213
By Gintare Sertvytyte, Pierluigi Sagarriga Visconti and Max Lensvelt, Platina Partners	
Introduction	213
The turbulent rise of the Italian PV market	213
Platina Partners' response to the regulatory changes	215
Conclusion	220
22. Southern Star: Creating value at a US-regulated asset	221
By John Veech, Morgan Stanley Infrastructure	
Introduction	221
Rate cases made simple	221
The Southern Star experience	222
The regulated US pipeline market	224
Planning for value creation	224
Adding to Capex	225
Managing relationships	226
Expansion projects	226
Conclusion	227
23. Opportunities and challenges in the Middle East energy sector	229
By Wissam Anastas, Deutsche Alternative Asset Management Global	
Introduction: A regional overview	229
The cases of Jordan and Egypt	232
Making the case for renewables	233
A pan-Arab common electricity market: Key benefits	235
Conclusion	236
24. Infrastructure investment in Africa: Navigating the regulatory and political challenges	237
By Clarisa De Franco and Eddie Buckley, CDC Group plc	
Introduction	237
Case study 1: Developing geothermal power in Kenya	239
Case study 2: Privatised power assets in Cameroon	240
Investing in Africa: Lessons learnt from an LP perspective	242
A strategy for future investments	243

25. Newcastle International Airport: A case study in active management in a UK public private partnership	245
By Boe Pahari and Hywel Rees, AMP Capital	
Introduction	245
The airport	245
AMP's approach to investment	246
Key value factors	247
Challenges to growth	249
Conclusion	251
26. Berlin's Brandenburg Gate: How not to build an airport	253
By Peter Jumpertz, Theron Advisory Group	
Introduction	253
Good idea, bad execution	253
Root causes of failure	255
Lessons learned from an infrastructure asset management perspective	257
Conclusion	260
27. Inexus: Managing an infrastructure business in a dynamic UK regulatory environment	263
By Stephen Wright, eSPe Investment Partners LLP	
Introduction	263
About Inexus	263
Doing the deal	263
Management	264
The building blocks of value	264
Delivering growth	265
Managing regulation	266
What an investor can do well	266
The end game	267
Conclusion	268
28. The commercialisation of Queensland Motorways in Australia	269
By Ross Israel, Leisel Moorhead and Trent Carmichael, QIC	
Introduction	269
Asset background	269
QIC's acquisition of QML	270
The strategy	271
Commercialisation	272
Developing a network platform	276
Equity sell-down	277
Conclusion	278

Figures and tables

FIGURES

Figure 2.1:	Decision aid for risk management	20
Figure 3.1:	Recent changes in regulated return in UK energy and water sectors	28
Figure 6.1:	Comparison of the relative importance of ESG issues in emerging and developed markets	49
Figure 6.2:	ESG issue prioritisation matrix	54
Figure 7.1:	Estimated impact of parking efficiency on 'cruising'	60
Figure 7.2:	Estimate of CO ₂ reduction as a result of conversion to natural gas – Residential	63
Figure 7.3:	Estimate of CO ₂ reduction as a result of conversion to natural gas – Commercial	63
Figure 9.1:	Hawai'i electric systems: Four electric utilities, six separate grids	77
Figure 9.2:	Fuel source for electricity production in 2013: Hawai'i and US comparison	78
Figure 9.3:	Net system load profile – island of O'ahu	80
Figure 9.4:	Net load profile – island of Moloka'i	81
Figure 9.5:	Renewable portfolio standard and energy efficiency portfolio standard levels in Hawai'i, 2008 to 2014	89
Figure 9.6:	Hawaiian electric companies distributed solar PV installed capacity, 2005 to 2014	91
Figure 16.1:	Planned capital expenditure in regulated infrastructure sectors, 2015 to 2020	160
Figure 21.1:	Solar capacity growth in Italy, 2008 to 2014	214
Figure 21.2:	Decreasing Italian power prices, 2012-2014	216
Figure 21.3:	Comparing hourly production from individual inverters at a PV plant	219
Figure 22.1:	Rate cases: Settlement overview	223
Figure 22.2:	Southern Star: Additional capex	225
Figure 22.3:	Southern Star – pipeline leakage below industry average	225
Figure 22.4:	Southern Star projects – average LTM EBITDA multiples	227

Figure 23.1:	Indicative energy infrastructure projects and themes	230
Figure 23.2:	MENA net electricity generation by fuel, 2010-2040	231
Figure 26.1:	Brandenburg Gate Saga: Historical timeline and projected completion date	254
Figure 28.1:	Queensland Motorways group (QML) network history pre-QIC ownership	270
Figure 28.2:	Map of the SEQ motorway network	271
Figure 28.3:	Strategic milestones for the DB Fund's investment in QML	272
Figure 28.4:	Indicative QML earnings uplift	276
Figure 28.5:	Value uplift realised by the DB Fund through its investment in QML	278
 TABLES		
Table 2.1:	Assumed consequences of event categories	19
Table 6.1:	Large-scale infrastructure projects and their challenges	51
Table 7.1:	Diesel vs. electric reefer containers: Estimated annual costs comparison	62
Table 9.1:	Roadmap and work scope for Hawai'i's energy transformation	84
Table 9.2:	Distributed Generation (DG) versus Electric Utility	86
Table 10.1:	Accounting for political risk: Four factors captured by S&P's country institutional and governance effectiveness score	98
Table 10.2:	Factors affecting the creditworthiness of renewable energy incentive schemes	104
Table 15.1:	Owners and annual passenger numbers at major US airports	148
Table 15.2:	List of state statutes authorising PPP structures	154
Table 21.1:	Tariff reduction options offered to Italian PV plant holders	214
Table 22.1:	Rate-making process	222
Table 23.1:	Recent PV deals and projects in Jordan	235

About the editor

Jeffrey Altman has over 20 years' experience in infrastructure asset management, investment management and transactions having worked within several utilities, an infrastructure fund as well as advising institutional investors in Europe and North America. He is currently a Senior Advisor to Finadvice (FAA Financial Advisory AG), one of Europe's largest boutique energy and infrastructure advisory practices.

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Jeffrey is also editor of PEI's *Best Practice in Infrastructure Asset Management*. In addition, he is the co-author of the White Paper for the US utility industry titled, *Development and Integration of Renewable Energy: Lessons Learned From Germany* and has authored several articles as well. Jeffrey has an MBA from the University of Southern California and a Bachelor of Science from the School of Foreign Service, Georgetown University.

About Finadvice AG

Finadvice AG is an M&A advisory firm specialising in the utility industry (electricity, gas and water) and renewable industry in Continental Europe with offices in Germany, Switzerland, Austria, Czech Republic, Poland and Romania. Since 1998, Finadvice has advised utility companies, energy trading companies and renewable companies as well as institutional and infrastructure and private equity investors investing in these sectors. Finadvice provides a range of advisory services with respect to investment decisions, including valuations, due diligence, regulation and economic calculations. Finadvice is 100 percent management-owned and has been supporting many of its clients since the foundation of the company. Collectively, Finadvice has worked on more than 250 projects worth over €45 billion since its foundation, which includes over 150 renewable energy assets.

For further information, please see: www.finadvice.ch

Introduction from the editor

A fundamental tenet of infrastructure investment is the notional symmetrical band whereby investors have both downside protection as well as a prudent range for outperformance before regulatory intervention is likely to occur. Yet this thesis has been tested in the last 20 years – and particularly in the last decade (2005 to 2015) – as the risk/return balance has proven rather *asymmetrical* for many investors, driven by the frequency, intensity and complexity of risks – regulatory, political, social, technological, climatic/environmental and economic.

Profound changes in telecommunications, water, gas, electricity and renewables have generated outsized returns for some investors, but significant value destruction for others. Further, rapid changes have occurred to business models in various infrastructure sectors – frequently over periods of eight years or less (shorter than the average hold period for most infrastructure funds) – thus challenging the widely held perception that the infrastructure industry is slow to evolve.

The confluence of these risks is at an all-time high. They are not one-off events, but dynamic. Their influence is growing and will shape the industry for the foreseeable future.

This dynamism coincides with a five-year global financial market environment of interest rate declines and credit spread compression driven by central banking policies. The combination of these two effects, added to widespread infrastructure asset class re-allocations by institutional investors, is producing asset price inflation as infrastructure funds seek to deploy these allocations. Indeed, many infrastructure asset prices are now exceeding pre-2008 bubble levels with historical amounts of equity and debt (much of which is being fixed over extended periods of time) pouring into the market. In such an environment, it can be argued that the level of actual performance risk inherent in these assets may become obscured by the ongoing high valuations. One may therefore conclude that the confluence of increasing risks and falling returns suggests that infrastructure investment may be reaching an inflection point. The question that must be addressed therefore is: Are current infrastructure risk-adjusted returns appropriate?

This book attempts to answer that question by drawing on the perspectives of leading figures in the infrastructure sector, including former regulators in the UK and US, global fund managers, a former UK treasury minister, global law firms, a global rating agency and a global risk manager. Case studies are also included showcasing how investors have addressed adverse and often capricious regulatory interventions that destroyed value, and how other investors have utilised regulation to generate superior returns.

Dynamic exogenous risks

Infrastructure risks fall broadly into two categories:

1. **Endogenous risks** – such risks are inherent to the asset and are largely within the control of the investor, management and employees. Examples include operating risks, cost overruns and performance.
2. **Exogenous risks** – such risks are beyond the control of owners, management and employees. Examples include regulation, GDP growth and other economic factors, social movements, political influences and disruptive technology changes.

My first book, *Best Practice in Infrastructure Asset Management: Creating and Maintaining Value for All Stakeholders*, published by PEI in December 2010, focused on endogenous risks. Although it sought input on exogenous risk no one was willing, at that time, to write on record about the impact of such risks on the sector.

Almost five years later, the infrastructure investment industry is now recognising and openly discussing the importance and scale of such risks. This book therefore focuses on assessing the six main exogenous risks (introduced below), the catalysts driving them and their interrelationships.

Regulatory risk

Among the exogenous risks, regulatory has received the most coverage in industry press. Whether it be retroactive taxes implemented in Spain and Italy or the decision in Norway (although a governmental decision) to reduce the tariff rate for Gassled's transportation contracts by up to 90 percent, these events foretell a new era of capricious regulatory changes and, as some would argue, breaches of national and international law. While many expected these actions to occur in emerging markets, they were considered unthinkable, until recently, in the OECD West.

However, regulation is, by its very nature, imperfect and new regulatory regimes are scheduled to occur in defined timeframes to reset regulation to achieve targeted outcomes. When there are perceived market distortions, through regulators' own guidance or by market dynamics, regulators may or may not have the legal right to implement new regulation or change existing regulation. It is here that many infrastructure investors place their entire focus on regulatory risk; to ensure there is a history of a stable regulatory regime as well as appropriate legal frameworks that can act as safeguards against, or at least minimise the impact of, interventions.

Yet investors relying on this two dimensional view of regulatory risk may face a nasty surprise. The two dimensions have become much more complex; with political, societal, technological, economic and climatic risks becoming more prominent, investors are now facing six dimensions of risk – a totally new universe.

Regulatory determination is no longer a process that considers the (then) long-standing perception of an industry's direction within a planned regulatory framework. Rather, regulatory determinations now need to consider a number of dynamic factors that collectively can (and have) radically change market structures and lead to new regulatory frameworks, which can also include unforeseeable regulatory interventions.

Political risk

Political risk manifests itself in two ways, geopolitical and national, and can have a significant impact on the infrastructure sector. Examples of geopolitical risk include: Russia

repeatedly cutting off Ukraine's gas supply, which has also impacted gas supply and pipeline stability across Europe; and US/EU sanctions on Russia over Ukraine and the EU anti-trust proceedings against Gazprom.

On a national (or as the case may be state/regional) level, governments may use their authority to dismantle regulatory bodies, enact new regulation and correct perceived market distortions, including windfall profit taxes or retroactive taxes. Where infrastructure companies and investors have achieved what is perceived to be excessive profits, some national and/or regional governments may seek to return these assets back into public ownership through renationalisation or by simply not renewing concessions, allowing them to receive the benefits of these large income streams.

However, it is social and technology risks that have driven both the largest value creation and destruction in infrastructure investment. Moreover, given certain dynamic catalysts, both these trends are likely to create the greatest risks and opportunities over the coming decades.

Social risk

Social movements have and will play an even greater role in the infrastructure sector. Environmentalism and distrust of financial institutions, foreign investors, and offshore tax havens are the major social drivers currently affecting infrastructure. Examples of social unrest include Australian voter outrage against infrastructure privatisation, which led to the State of Victoria cancelling the AUD6 billion East-West Link contract and the State of Queensland withdrawing some AUD37 billion in privatisations.

Environmentalism is the strongest social movement to date and affects every infrastructure sector through higher standards for air, land and water quality and waste management, requiring hundreds of billions of investment in new and existing facilities. It has unequivocally and dramatically changed industries across the globe and will continue to shape sustainability within the infrastructure industry. For example, the massive social protests that followed the Fukushima disaster led Germany to close a third of its nuclear fleet immediately and to schedule the rest for closure by 2022 and Swiss voters to approve a referendum to close all nuclear plants at the end of their current lives.

The global finance community has also been under enormous social scrutiny, which has resulted in greater regulation of banks, private equity and infrastructure operators. The infrastructure industry is just beginning to address societal perceptions of private infrastructure ownership by the formation of two industry groups: the Long-Term Infrastructure Investors Association (LTIIA) and the Global Infrastructure Investor Association (GIIA).

Foreign investors have been the target of social movements whose emotions have ranged from nationalistic fervour to outright xenophobia. Further, the broad ownership base of foreign investors appears to empower politicians and regulators to 'diversify the pain' by reducing the concentration of local investors (thus reducing blowback from the local investment community) and therefore providing flexibility to implement retroactive taxes and/or lower returns via new tariff regimes. This empowerment is bolstered by revelations of the aggressive use of divergent and inefficient global tax regimes and treaties by multinational corporations and investors to move profits from high to low tax jurisdictions, leaving consumers and politicians with a strong taste of unfairness. As noted by the current chair of Ofwat (the UK's water regulator), the infrastructure sector

Technological risk

has adopted some of these techniques by establishing companies outside the tax jurisdiction of their operating entities.

Technological innovation is having the greatest impact on the infrastructure industry and investment returns. Mobile telephony and fibre optic cables have made many metal or copper wire networks redundant and, with respect to developing markets, virtually non-existent. Another example is the impact of horizontal drilling and hydraulic fracturing (fracking), which has been nothing short of game-changing. It has, for example:

- Changed the global oil and gas supply outlook, helping to drive down prices.
- Led to an ongoing shift in US power generation from coal to gas, creating a global coal glut and price collapse, which has all but bankrupted EU gas-fired power generation.
- Driven down the value of US liquefied natural gas (LNG) import infrastructure to the point where it is being reconfigured for export.
- Driven a seismic shift in the geopolitical landscape for the US, Middle East and other OPEC countries, and Russia, and ignited a market share war by Saudi Arabia.

Renewable energy is having a disruptive effect in the electricity sector, particularly in Europe. However, it should be noted that it is the large amount of subsidies created by governments and regulators that have been disruptive to the power markets, not the technologies. Advances in energy storage technologies and lower cost renewables could ultimately transform the electricity sector by solving the issue of renewable intermittency and possibly move the industry more towards a distributed network. Water will likely be the next industry to be impacted by technological innovation. Technologies are being developed to improve, for example, leak detection, storage, purification and waste processing. There is even distributed water purification, waste processing and storage systems being introduced for developing markets whereby with time, production modules, scale and scope, these units could ultimately appear in developed countries as a disruptive innovation.

Technology is also being further advanced to provide critical data to consumers of utilities, empowering them to efficiently manage, and potentially radically change, consumption usage patterns and perhaps even procure services (depending on regulation), as key information will be delivered on a real-time basis with the assistance of smart thermostats, smart appliances, smart meters and software. Silicon Valley is attempting to play a major role with regards to developing, processing and owning this information. Moreover, there is the likelihood for Silicon Valley to use this data as a Trojan Horse to sell utility (power, gas, etc.) and other related services to the homeowner. In the near term, the real battle will be in the courts and with the regulators, with respect to who owns this data; information companies will claim it is public domain and belongs to everyone, while consumer protection groups and utilities will claim such information is private. The outcome of these decisions will determine how the utility industry evolves.

Finally, the threat from cyber attacks poses enormous political, social and financial risks to infrastructure owners. Those found to be negligent in maintaining their security will likely be held accountable financially and even potentially criminally for their inactions.

Climatic and environmental risk

Climate and environmental issues have already greatly influenced the infrastructure industry and further sudden or prolonged climate change will present even more challenges in the future. The Californian drought, in its fourth year in 2015, has just required a historical state-wide water conservation plan. The implications of that plan for water and electric utilities (both large water and power – and hydro power – users) remain unknown, as do the long-term implications should the changes in weather patterns be permanent. This is indeed one of the great known unknowns.

Economic risk

Economic risk can be assessed on two levels: macroeconomic and microeconomic. From a macroeconomic risk perspective, the recovery from the Global Financial Crisis has been slow, GDP growth remains muted and consumers and governments overleveraged. OECD and developing countries are expected to continue to struggle for some time to shore up their fiscal deficits and minimise the impact of austerity and stagnant or falling median incomes on their citizens. The large fiscal deficits of both federal and state governments continue to be exacerbated by regional recessions and stagflation. Conversely, a spike in inflation could have detrimental effects necessitating regulatory intervention.

From a microeconomic risk perspective, the aforementioned risks have in many cases greatly affected the market economics of various infrastructure sectors. For example, the European renewables sector, which received large subsidies from governments and regulators, experienced rapid uptake by environmentally and cost-conscious consumers and investors (enticed by cheap subsidies). This created overcapacity in the power markets and drove down the wholesale price of power. The result was the planned closure of many thermal plants, which were needed to support the intermittent production of renewables. Regulators then introduced retroactive taxes in various countries and/or other measures to correct real or perceived market distortions, which severely impacted renewable investors' returns. Moreover, for those plants whose feed-in-tariffs have expired, as most renewable plants (hydro, wind, solar) have variable costs of zero, these entities are bidding their power at low prices which, combined with the over capacity in the markets, is now negating the terminal value of many renewable funds' recently installed projects. The net result of these risks is that cost of capital has increased across the whole power sector, while overall returns have gone down. This increase in the cost of energy is ultimately passed on to consumers with the potential to create a cost of living issue. Consumers will then address their concerns with politicians and regulators, who will likely initiate further asymmetry for infrastructure investors. The thread of these expected changes again increases the cost of capital. In countries with a history of retroactive changes, it has become difficult to find investors.

Catalysts of change

Driving these dynamic changes is the increased alignment of regulators, consumers and politicians. Regulators have driven increased transparency and have encouraged consumer engagement. This drive coincides with technological innovation and social media, which enables consumers to achieve greater efficiencies in time, data management and aggregation of supporters and funding – in short, greater empowerment. Consumers have effectively utilised technology and social media to form special interest groups, which have significant influence over decisions made by regulators and politicians through the power of vote and/or the power of the purse (for example, financing special interests groups and/or lobbying organisations to influence outcomes or funding election campaigns of aligned politicians).

Implications of the new normal

Regulators have demanded transparency of service and pricing performance, environmental responsibility and other requirements on infrastructure businesses. Further, increased access to information has enabled consumers to better understand how businesses operate. Regulators have incorporated consumer engagement into their overall model and decision-making with respect to existing/new rate cases, accidents/incidents, and mergers or sales of companies. There are many instances where consumers have responded vociferously, materially changing outcomes. Fracking in Europe is a good example where the strategic requirement for cheaper gas and energy independence as well as the upside of employment was overridden by the environmental concerns of the populace.

As recent events have proven, the rule of the regulator and/or the rule of law can be usurped by an incoming/existing government, in many cases driven by social movements, which can perhaps be best described as consumer empowerment. This is likely to affect the infrastructure industry permanently.

Whether the infrastructure industry is entering a paradigm shift or not, there now is a 'new normal' for the foreseeable future, which can be summarised as follows:

- Greater volatile geopolitical situations impacting the supply of natural resources and/or distribution of technologies.
- Greater political involvement as well as possible further interventions to correct perceived market imperfections. There is probability for further moratoriums on privatisations and for assets to reverse to state ownership.
- Prolonged period of regulatory austerity for infrastructure owners in order to represent the interests of consumers during difficult macroeconomic times and/or technological transformations.
- More frequent regulatory interventions, particularly in industries affected by technological innovation.
- Greater empowerment of consumers requiring infrastructure investors to justify returns and sustainability and to proactively engage with the communities in which they operate and serve.
- Dynamic technological innovation is creating greater operational efficiencies, further major changes in demand profiles, new business models and possible disruptive changes to various infrastructure sectors.
- Infrastructure returns will ultimately be impacted by the frequency, intensity and complexity of asymmetric risks. This will inevitably change fund structure models and the way investors conduct business

In conclusion, as Dorothy in *The Wizard of Oz* stated: "Toto, I've a feeling we're not in Kansas anymore."

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