International Market Opportunity Analysis for the Scottish Water and Wastewater Sector

Report commissioned by Scottish Enterprise, with the support of Highlands and Islands Enterprise

upperquartile

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Executive Summary

Upper Quartile LLP was commissioned by Scottish Enterprise to undertake research into the international opportunity for companies and organisations involved in the Scottish water and wastewater sectors. The purpose of the research was to assess the international marketplace for water and wastewater, and to identify those markets and market regions which offer the optimum export potential for Scottish companies.

The research sought to match the export opportunities against the capabilities and strengths of the sector in Scotland, and present an overview of each export market identified, and the specific opportunities and routes into each export market for Scottish companies. The report provides a breakdown of the main findings for each market, and sets out a series of recommendations arising from the research.

The International Water and Wastewater Market

The water/wastewater sector is defined as any part of the water cycle where services and products are provided to the market, including water and wastewater supply and treatment, water infrastructure and ground water remediation, water instrumentation and smart management tools, and water features.

The international water and wastewater market is huge – the OECD estimates the current global market to be worth $650 billion, and the United Nations is projecting global water demand will increase by 40% between 2014 and 2020, with specific pressures and demands on water supply and infrastructure in developing countries.

The increasing effects of climate change together with the growing world population and the rapid urbanisation being witnessed in many markets, is placing unprecedented demands on water supply, and water and wastewater infrastructure. The introduction of more stringent environmental legislation and regulation in markets regarding water supply and use is also creating a significant market opportunity for new technologies and processes across the industry.

The Scottish Capability and Company Base in the Water and Wastewater Sector

Given the size and scale of the international water and wastewater market, there is a need to better understand which markets and market regions match most closely with the expertise, knowledge and skills base across the Scottish company and research base.

The Scottish Water and Wastewater sector is home to a significant number of diverse companies, a number of whom are specifically focused on this market sector, whilst there are also a significant number of large engineering companies and smaller specialist technology and product development and service companies who supply to the sector. There is also a substantial and growing academic and research knowledge base for the water and wastewater sectors in Scotland.

The Scottish Government Hydro Nation Initiative is also seeking to raise the international profile of Scotland as an international leader of water management and governance, and there are a number of initiatives under way, such as the proposed Water Innovation Service currently at procurement

stage, to support Scottish companies to develop their products and services for international markets, and to assist companies to identify and develop international market opportunities. In addition to Scottish Water, and its international arm Scottish Water International, it is estimated there are around 133 companies actively working across the sector in Scotland. A recent report from Innovas Consulting into the make- up of the sector in Scotland concluded:

- 52 Scottish companies supply some form of equipment for water supply and wastewater treatment
- 39 of these companies also design and manufacture this equipment
- A further 24 Scottish companies design and manufacture a range of pumps, valves and pipes for the water and wastewater sector
- 41 companies provide services and products in the field of water testing and monitoring, including sensor equipment
- 15 companies are involved in products associated with the smart management of water (i.e. instrumentation including sensors)

A significant percentage of the Scottish companies involved in the sector currently export to a wide range of international markets, and are looking to further develop their export activity into new and existing markets. There were high levels of interest across Scottish companies in the more developed markets of North America and Asia as well as the more traditional European markets, and in countries experiencing high and concentrated population growth such as India and China.

The Export Opportunity

The research initially considered a broad range of market regions where there appeared to be high market demand for water and wastewater support and solutions, and which matched with the Scottish company expertise base. Markets researched under Stage 1 of the research included:

- Central Europe
- Southern Africa
- China
- India
- Ireland
- North America
- South East Asia

Each market was assessed in terms of current Scottish company activity in the market; the opportunities in the sector for Scottish companies; the ease of doing business and entering each market; and the initial match against Scottish capability and expertise in the sector. A basic ranking of each market was undertaken and the following four markets were selected for more in depth research in terms of the specific export opportunities for Scottish companies:

- Canada
- India

- Poland
- SE Asia

It was recognised within the review of the Stage 1 research that export opportunities exist in all the markets considered, and Scottish companies are active across all of these markets. The four markets selected for Stage 2 were both felt to offer significant export opportunity for Scottish companies, and that Scottish companies appeared less aware of these market opportunities than the more traditional markets of Europe and the USA.

The Stage 2 research considered the following for each of the markets selected:

- Introduction to the Market
- Overview of the Water and Wastewater Market within the country
- Export Issues and Challenges
- Effective Routes into the Market
- Priority Market Opportunities for Scottish companies.

Canada is rapidly developing its water infrastructure and management processes presenting a range of business opportunities for Scottish companies. There are significant opportunities across the areas of smart flood protection, soil remediation, and membrane solutions and technology to treat highly charged wastewater in particular.

There are a number of federal regulations which are driving the market and are highlighted in the report. While the national and provincial levels of government continue to have a major role, the municipal level of government and sector associations are particularly important in the water and wastewater sectors, especially the greater metropolitan regions such as the Greater Toronto area, and Metro Vancouver. British Columbia, Alberta and Ontario are highlighted as also presenting significant opportunity for Scottish companies in the Water and Wastewater sectors.

Doing business in Canada does not present any major barriers for companies, and UKTI in particular have developed a good deal of knowledge and insight into the Canadian water and wastewater sector.

India, with its rapid population growth and urbanisation together with increasing water scarcity, presents a huge number of market opportunities for Scottish companies. Water, wastewater and contaminated groundwater treatment products and services are all in high demand and represent the primary current export area of opportunity for Scottish companies.

Indian SMEs in the sector - with their advantages of domestic production costs - are eager to internationalise by accessing cutting-edge technology and good practice through international partnerships. Technological innovations – for example in water treatment membrane technology, and arsenic removal – are in high demand. Another area highlighted in the report is in institutional support to water and wastewater stakeholders in India.

Poland has significant funding now being put in place through national and European funding streams to invest in its water infrastructure, and Poland also offers opportunities for Scottish businesses, particularly in the area of wastewater treatment. It is the largest economy in Central

Europe and the largest of the newer member states, and it continues to grow. It is both a significant market in its own right for Scottish companies and also acts as the gateway to other markets in Central and Eastern Europe.

There is a good overall match between the priority needs of the Polish market and the capabilities of the Scottish company base. The effective identification and sourcing of potential business partners will be the key first step for Scottish companies, and ensuring the partner is well connected into the industry and the tendering process, where much of the work comes through at municipal level.

The British Polish Chamber of Commerce has started to gain a very strong track record as the outsourced provider of export support for UK and Scottish companies, and is very keen to work with companies in the water sector exploring the Polish market.

SE Asia, in particular the three markets of Singapore, Malaysia and Thailand which the research focused on, offers opportunities of varying scale and potential for Scottish companies. Thailand has the largest population and scale of potential but Singapore, a city state with a population smaller than Scotland, offers a more immediate potential market for Scottish companies.

The Singapore government identified water as a key sector for growth in 2006 and has also invested heavily in R&D in the sector and the development of a strong cluster ecosystem of local and international companies linking with complementary sectors including research and higher education.

Malaysia is an exporter of water to countries such as Singapore with agreements in place until 2061. However highly urbanised areas are growing fast and the country is facing water shortages as well as problems with cleanliness and waste treatment. Thailand has an increasing focus on environmental issues including water, and solid waste management and pollution control are two of the main areas of opportunity identified.

A number of Scottish companies are already active in the SE Asia market, and there is significant potential to further expand this activity, and build on the research and company links already in place across the market.

The Scottish Proposition

The research also reviewed how the Scottish water and wastewater sector is perceived in international markets, and how the image and proposition of the Scottish industry sector for international markets could be developed to assist companies maximise the export potential open to them.

There is currently a limited perception of Scotland in international markets in terms of the water and wastewater sectors, as compared to Holland and Germany for example. The development and promotion of Hydro Nation should help to address this over time, closely aligned to the sector strengths in Scotland.

The water and wastewater sector in Scotland is largely non-competitive and complementary, and an increasingly collaborative approach to promotion in international markets should work well, demonstrating the broad range of strengths and expertise across the sector, and allowing a sharing

of export market knowledge and experience. Any proposition should also build on Scotland's traditional reputation for engineering and science, and embrace its academic research base which is well perceived in international markets.

A combination of both the emerging and wider positive messages and profile from the companies in the sector, together with an emphasis on the key relevant features where Scotland is already distinguished and well respected for, should form the core proposition, building also on the work done by Hydro Nation in telling the water story of Scotland.

A particular target market for the Scottish proposition would be the key organisations such as the EU, UN, OECD, and the main aid organisations such as DFID, who are all extremely influential in their commentary on the sector; funding streams being delivered into the sector, and facilitating knowledge and awareness across the sector – similarly the International Water Journal of the International Water Resources Association (IWRA).

Conclusion and Recommendations

The research highlighted a number of significant market opportunities for Scottish companies in a range of individual export markets, matched with the company base and the emerging strengths of the Scottish water and wastewater sector.

A series of recommendations based on the research findings are set out in the report and include:

- The opportunity for greater collaboration across the sector, not just in terms of export development, but across other areas such as research and innovation, which could be facilitated and promoted through a workshop approach focusing on individual export markets.

- The industry should engage fully with the support mechanisms available through SE and HIE, to develop, test and demonstrate the products and technologies coming to the market and adapt these as appropriate for the international markets.

- Technical export workshops covering key areas such as licences, export documentation, and individual market specifications would assist companies to better understand and develop the export opportunities in each market.

- The development of a compelling international Scottish proposition for the sector with cross industry engagement.

- The development of appropriate tailored support for companies committed to actively developing the export markets highlighted – involving a mix of learning journeys to key markets and exhibitions, identification of specific opportunities; and assistance with export market partner search and selection.

- The sector itself in Scotland should look to establish an international forum, to facilitate cross sector engagement in terms of both export market experience and knowledge, and routes into the different markets.

1.0 Introduction

In August 2014 Upper Quartile was commissioned by Scottish Enterprise to undertake an international market analysis to review the export opportunities for businesses across Scotland operating in the Scottish water and wastewater sector.

For the purposes of the research, the water/wastewater sector was defined as any part of the water cycle where services and products are provided to the market, to include:

- Water Supply and Treatment
- Contaminated water and wastewater treatment
- Infrastructure and services for water efficiency, water conservation, and flood prevention
- Use of water for heat (but not hydro-electricity)
- Smart management of water including instrumentation
- Ground water remediation
- Water Features and Swimming Pools

Alongside the international market analysis, a further project was commissioned by Scottish Enterprise through Innovas Consulting to gather information and assess the key strengths and capabilities of Scottish companies involved in the water and wastewater sector – including their ambitions and current activity in export markets.

International market opportunities in the water and wastewater sectors are clearly a very significant and growing market. A recent Organisation for Economic Cooperation and Development (OECD) report into water issues identified that in approximately one third of OECD countries, fresh water resources are under medium to high stress and many more countries are facing seasonal or local water quality problems.

Climate change is multiplying the risks generated by more frequent droughts, floods or heavy rains; and the search for clean water and effective wastewater treatments and new technologies in both developed and developing countries is growing rapidly. The OECD estimates that annual expenditure on water infrastructure in member countries and BRICS countries alone will be in the range of US$800 billion to US$1 trillion between 2014 and 2025.

Given the scale and size of the international market potential and opportunity, there is a need to focus and prioritise efforts and resources into those export market opportunities which offer the most significant and immediate potential for Scottish businesses and their capabilities and technologies.

This research sought to initially explore the wider international market opportunities in the water and wastewater sectors, and then focus on the specific international markets where there are believed to be significant opportunities for Scottish companies, and where there is a strong match with the capability of the Scottish company, and research and technology base.

Upper Quartile would like to take this opportunity to thank the significant number of contributions to the report from both the companies and agencies working across the sector, and in particular the support provided through SDI and UKTI overseas offices.

2.0 Project Objectives & Research Methodology

2.1 Project Objectives

The primary purpose of the report was to provide an analysis of the international market opportunity for Scottish companies, and to examine how best Scottish companies can take advantage and exploit those export markets, and the specific export opportunities, which best match against the Scottish capabilities in the water and wastewater sectors.

The specific objectives of the project were to:

- Raise awareness among Scottish companies of international market opportunities
- Complete market research for 6-8 target markets offering opportunities to Scottish companies and prioritise these markets
- Develop 4 more detailed country / region profiles to identify specific export opportunities available to Scottish companies in various sub-sectors
- Provide recommendations on how the Scottish water / wastewater sector can meet the SDI targets listed below, identify best route to market models, what should be the Scottish water/wastewater proposition for international markets, identify suitable trade missions and events to promote Scotland's capability and identity, and which type of events would be most appropriate to promote Scotland's capability.

The outputs of the project will support the SDI objectives for the water and wastewater sectors as follows:

- To support companies in the sector to increase their export turnover
- To increase the numbers of Scottish companies successfully accessing new export markets
- To underpin the SDI export assistance to companies in the sector

It should be noted that the report solely concentrates on export opportunities and not inward investment opportunities.

2.2 Research Methodology

The research project was undertaken over September to November 2014 and was divided into three stages as set out below, with a final report issued in January 2015.

Stage 1 International Market Overview

The first stage of the project involved a desk based review of all available information on the international market for water and wastewater, the main drivers and enablers for change across the industry, and an overview of the opportunities for the sector across the different geographies. This provided the basis for the identification and development of individual market profiles for a number of export markets agreed with SDI.

The approach taken was first to consider the international market on the basis of a geographical split, and then where possible identify the individual export opportunities related to the different sub-sectors and technical capability of the Scottish company base.

The market profiles took into account the size and potential value of each export market; the identified regulatory regime and drivers in each market; and the economic outlook and profile for each market, including the relative ease of doing business, and any specific factors relative to the water and wastewater market in each country. The scoring matrix for each market is set out in chapter 5 of the report.

This initial ranking of the export markets was then reviewed with SDI and a decision taken to undertake further in depth research into 4 priority markets, alongside the key exhibition and conferences for the sector, within Stage 2 of the research.

Stage 2 Priority Market Profiles

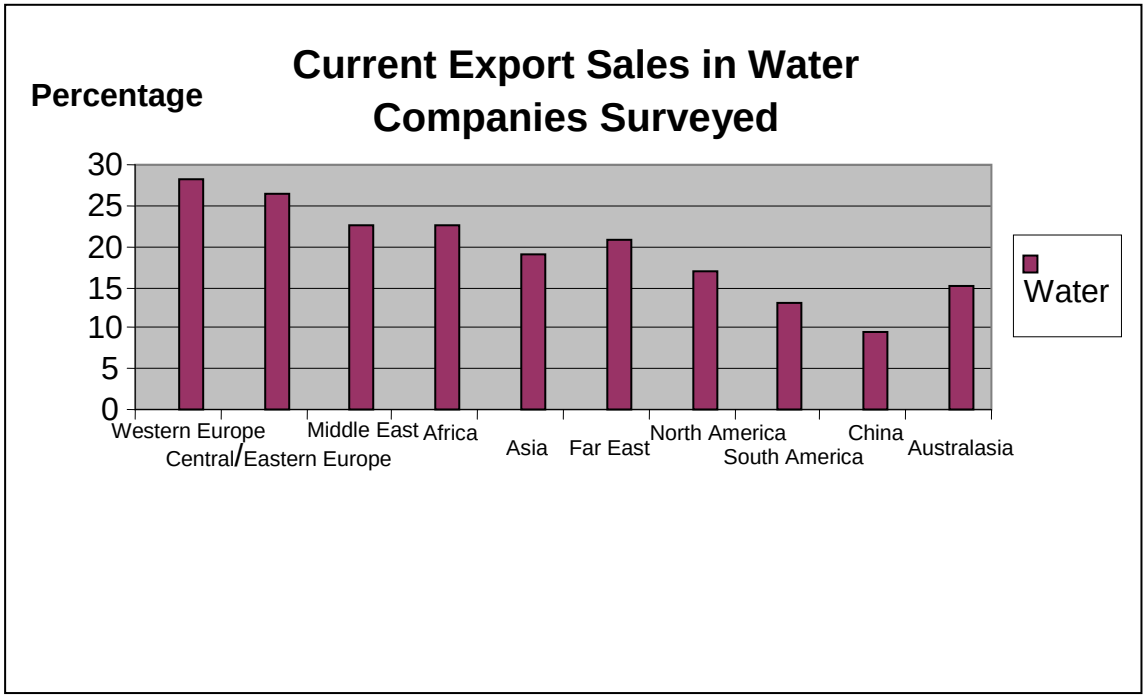
The four identified priority markets for Stage 2 of the research were as follows:

- Canada
- India
- Poland
- South East Asia Region – specifically Singapore, Thailand and Malaysia

While export opportunities are apparent in all the markets reviewed at Stage 1, the four markets selected for Stage 2 were felt to provide distinct opportunities which matched well against the Scottish company base capability. The priority markets selected also matched with the main findings of the recent Innovas report, “Analysis of the Scottish Company Base and Market Opportunities: Low Carbon Heating & Cooling and Water Supply & Wastewater Sectors.”

The Innovas report found that Scottish water and wastewater companies are targeting a wide range of international markets, both developing and developed markets, due to the wide mix of technologies and capabilities across the Scottish company base. There is considerable interest both in developing markets with high population growth such as India, and the more developed markets

of Central Europe, Asia and North America, particularly for new water technologies and applications, as shown in Figure 1 below:.



Source: Innovas Sector Survey (2014).

Whilst it is recognised a number of the Scottish companies are active and targeting established export markets such as Western Europe and particularly the Middle East countries with their rapidly expanding infrastructures, the four markets selected also offer distinct and significant opportunities for the Scottish water and wastewater company and research base.

Further primary and secondary market research was carried out for all four markets in terms of the specific export market opportunities; how companies could best approach and develop each selected market; and where possible key potential contacts and partners were identified in each market. Discussions were also held with a small number of companies from the sector, (Appendix 1), to determine their experience and approach to export markets, and how best any assistance to companies to develop export markets could be positioned.

Stage 3 Market Analysis and Recommendations

The final stage of the project reviewed and identified the priority export opportunities for Scottish companies, and provides a set of recommendations as to how the Scottish companies and the sector overall could best position itself to develop the export markets identified, as set out in the subsequent sections of this report.

3.0 International Market Overview

This first section provides an overview of the global context and environment for Scottish water and related sector businesses to pursue exports of their products, services and technologies in water/wastewater to the international market place. As discussed above, there are opportunities in virtually every international market, but this project seeks to target priority and identified areas of market opportunity, whether through the drivers of change highlighted below or in terms of the best match with the capability of the Scottish sector. Figure 1 below highlights the countries reviewed in the study, demonstrating the breadth of opportunity geographically

Figure 2: World Map highlighting countries studied (Source: Upper Quartile LLP)

The desk review carried out of international sources also examined the different market segment opportunities including the emergence of the smart water market, urbanisation pressures and synergies with other sectors notably energy, as well as initially highlighting specific geographic opportunities. Opportunities around Smart Water systems involves the use of Smart Water meters together with the latest technologies and real time data to better monitor water usage and detect problems such as leakage. This link between efficiency and technology exemplifies the high value cross sector development potential for Scottish technology and intelligence companies.

3.1 Introduction

Water infrastructure development globally is rapidly expanding to meet the needs of a growing world population, and increased demands in standards of living in both developed and non-developed countries, offer major potential opportunities for Scottish companies, particularly in urban fresh and wastewater systems and infrastructure. International development bodies and aid agencies also have very significant programmes targeting effective solutions for clean and wastewater in developing and fragile economies. This presents particular opportunities for smaller suppliers to provide bespoke local solutions and to test new approaches to global problems.

As indicated in the introduction, the sheer size of the international market potential and opportunity must be seen and considered against the relative capability and scale of the Scottish industry. There is clearly a need to prioritise efforts and resources into those export market opportunities which offer the most significant potential for Scottish businesses – and how best Scottish companies can be prepared and developed to maximise the opportunities, and develop the most effective approaches to particular markets and market entry routes which will drive sustainable exports to each market.

In addition to water companies, utilities and partnerships, the broader global water market is a $650 billion sector (Source: OECD) with multiple dimensions, complexities, and local considerations. Beyond the municipal sector, industrial companies have strategic needs to secure access to water supplies and high quality water. For example, microchip manufacturing and pharmaceutical companies require increasing assurance to reliable pure water. There are opportunities related to this industrial sector and in others including agriculture and energy where there is a close relationship with water and the search for greater efficiencies through the effective use of technologies that enable the recycle, repurpose, and reuse of water.

Figure 3 as below shows a representation of the water usage cycle:

The drive for efficiency and the whole move to Smart Water presents opportunities in global markets covering direct water applications, services and advice, to linked applications in management systems and software, data monitoring and the analytics needed to make more informed decision-making, reduce risk and costs as well as meeting regulatory challenges.

3.2 Drivers for Change

Change in the industry is often being driven by environmental legislation, which is pushing for cleaner processes by less water consumption and more robust and stable processes. Other influences that create opportunities cover specific industrial water re-use trends and opportunities within a global context, and the major industry opportunities in agriculture, textiles, chemicals, paper and other manufacturing sectors. All these sectors are heavy users of water often in areas of increasing scarcity and higher cost of water (as well as the socio-political pressure for resource use restraint), and this creates opportunities to provide bespoke solutions to these sectors.

Regulations in many developing countries also facilitate the decentralised, distributed water model. In China, new buildings with more than 100 inhabitants are required to have self-contained wastewater networks and in mature developed urban markets with existing already stretched and aging infrastructure, such as the U.S., there are opportunities for technology to provide more modular on-site systems particularly to address industrial and city needs.

The demand for water is growing exponentially. With the world population expected to grow from 6.5 billion in 2010 to 9.5 billion in 2050—and the steadily increasing demand for food and manufactured goods—the pressure on limited fresh water resources is rapidly becoming unsustainable. The search is on to provide solutions from local project opportunities to major infrastructure and related developments in water re-use.

Urbanisation and the growth of cities in developing countries is also a major driver of change for the sector. The vast majority of the projected increase in demand for water will be in cities located in developing countries (UN-Habitat, 2012).

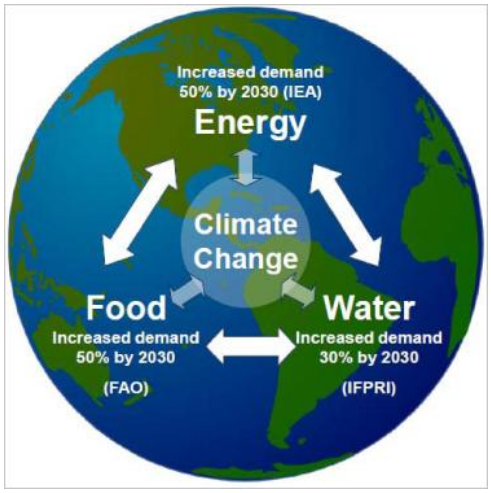
3.3 Water Market Segment Developments and Opportunities

The range of international opportunities and potential is enormous. Specific water related segments showing particular growth in international markets include water reuse, desalination systems and filtration membrane technologies, all offering significant opportunities for Scottish companies.

Water and energy are both drivers and inhibitors of economic growth and development in all areas of the world. Water is a major, and generally inefficient, user of energy; while energy is a major, and generally inefficient, user of water.

Major opportunities exist, especially in the nexus between the energy, food and water sectors, as noted in The United Nations World Water Development Report (2014). These points of synergy present wider opportunities for companies contributing to the improvement in the efficiency and sustainability with which water and energy are used, along with food production.

Figure 4 below demonstrates the relationship between these issues in more depth:



Water-Energy-Food Nexus
Source: International Food Policy Research Institute

As part of any risk assessment process, an overview of the legal and regulatory frameworks in each country also needs to be assessed by companies in examining opportunities such as:

- Energy-smart and water efficient solutions for industry, agriculture and urbanisation;
- Innovating cities and smart solutions;
- Smart water and Industry conservation/efficiency improvements including environmental management, design and development of process control equipment, and the application of recycling technologies such as on-site recovery and reuse of wasted materials.

3.4 Urbanisation and Smart Cities

Urbanisation/ city concentrations present a growing opportunity for suppliers of smart technologies. Smart water management solutions use technology to optimise performance, minimise disruptions and conserve water; the technology manages the distribution and management of water resources, where demand-side efficiency is enabled and where products improve water efficiency and food production. Frost & Sullivan (international water industry consultants) estimated that the Smart Water Grid market was worth $5.8billion/annum in 2010 and that this will quadruple to $22.2billion/annum by 2020.

The OECD agree with the potential for business growth in this area and the scope for innovative techniques and business models to secure water-related services which will consume less water, reduce energy and capital requirements. The OECD state that the private sector will play an important role in this change and that public policies can go a long way to supporting the development and diffusion of innovation, open access to market for SMEs and generate new wealth.

A leading Swiss international investment and asset management company, Robeco-SAM, which focuses on sustainable investments, has identified four sectors of the water industry which show strong potential for growth:

• Distribution and management of water resources: upgrading water mains and sewer infrastructure, developing systems for supplying freshwater and removing wastewater, companies who act as utilities or manage water resources;

• Advanced water treatment: companies who treat and disinfect water or provide necessary control systems and analytical instruments;

• Demand-side efficiency: products and services that boost the efficiency of water use in households or industry;

• Water and food: products that improve water efficiency and reduce pollution in crop irrigation and food production.

According to United Nations projections, global water demand will rise by 40% between now and 2020 and that this will be 50% higher in developing countries. As demand increases, utility companies will look to find more efficient methods of managing the water network and diversifying supply, such as through the provision of reclaimed water.

A study by TaKaDu Ltd in 2012, a leading international provider of Integrated Water Network Management Systems, showed the importance of water efficiency management as a driver of improvement by operators. Their survey responses to the most important considerations are shown in the diagram below. It is notable that reduced water loss and operational efficiency improvements account for over 60% in the responses.

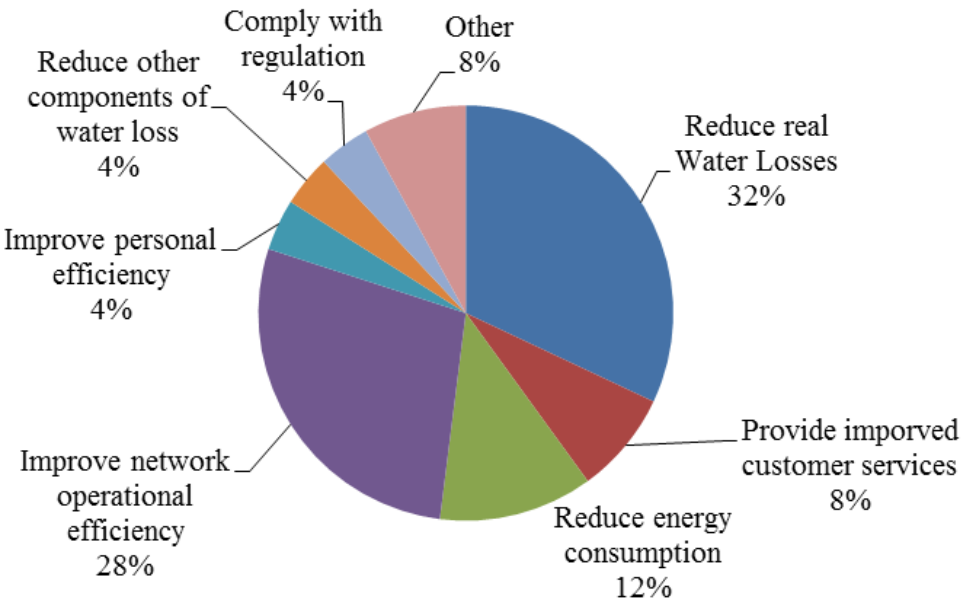


Figure 5 Source: TaKaDu Ltd (2012)

The OECD estimates that the increase in demand for water will come from manufacturing (+400%), electricity (+140%) and domestic use (+130%). Agriculture is also a significant opportunity. Research by Frost & Sullivan show the growth forecasts by global regions for companies servicing the smart water market as illustrated below. This shows the largest markets will be those in Europe and the U.S.A, while Asia and the emerging markets in Latin America, and Africa will produce growth of between 15% and 20%.

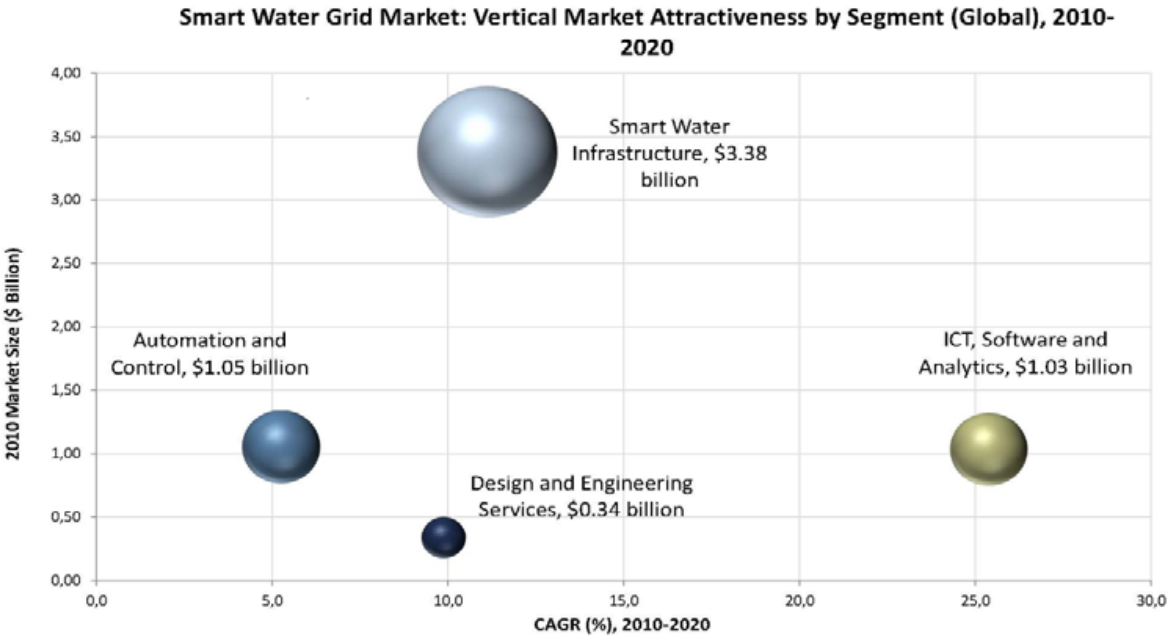


Figure 6 Source: Frost & Sullivan 2012 (CAGR – Compound Annual Growth Rate)

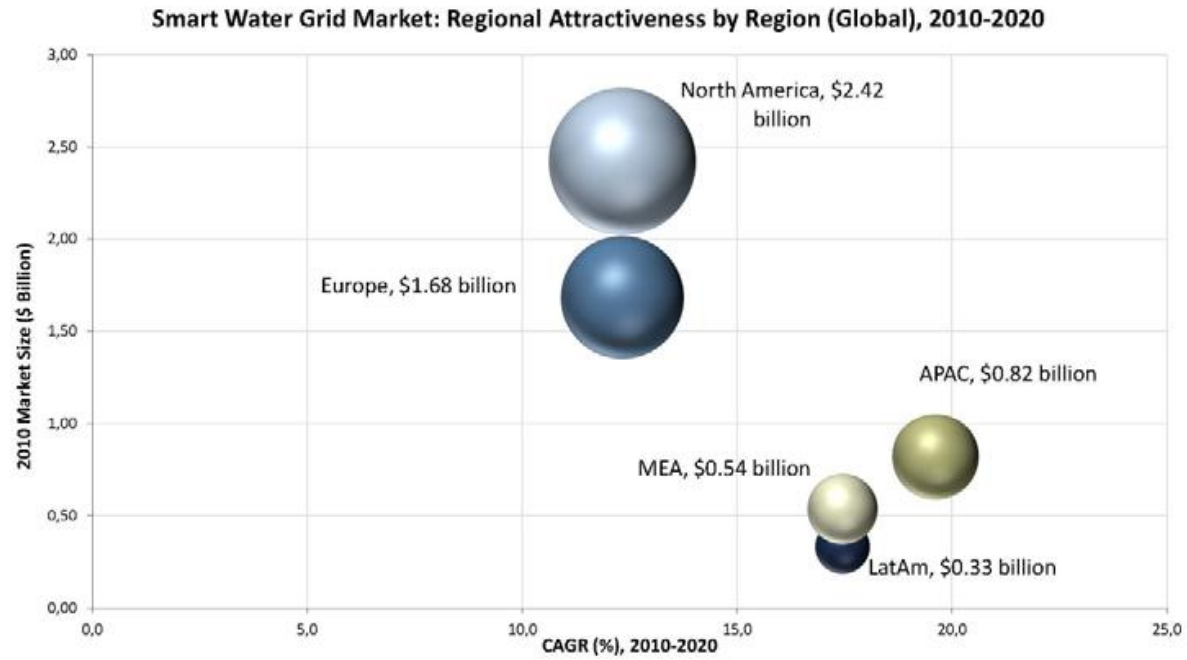


Figure 7 Source: Frost & Sullivan 2012 (CAGR – Compound Annual Growth Rate)

The European water and wastewater market is also noted as an area of particular opportunity for companies in the automation and control sectors, and research by McKinsey & Company, the global Management Consultancy, indicates that the private and public-sector market for products and services that improve water efficiency is estimated at $50 to $60bn annually over the next two decades.

The research indicates that EU directives are the major driver for the growth of automation and control systems across the water and wastewater sector as the regulations aim to enhance water and the wastewater infrastructure, and these regulations are anticipated to spread from the EU as the standard drivers globally for the industry.

This will see more completely automated plant, new systems for continuous tracking of production processes, and control and maintenance of various plant operations. Markets in Eastern Europe, Iberia, parts of Italy, and Benelux are undertaking large-scale implementation of water treatment plants with again wider supply opportunities for companies with the right expertise and technology.

3.5 Summary

Water and its use in industry, agriculture and the home offer major opportunities globally across diverse supply chains, industries and geographies. The massive increase in demand ahead of supply creates a situation where future opportunities will become more attractive and lucrative with the potential to continue to outperform other assets.

Many markets offer significant opportunities but often involve higher levels of risk and barriers to entry. A number of Scottish companies are already active in the mature and near markets such as Western Europe, whilst a few are beginning to export successfully to the faster growing opportunities in the developing country markets and the BRIC countries, with increasing demands for water as these economies grow – India and China combined account for one third of the world's total water consumption.

However this needs to continue to be balanced with the still significant opportunities presented by Western and Central Europe and the USA where there are generally lower levels of business risk to SMEs, and where Scottish companies have successfully collaborated on a range of major contracts.

Looking ahead, the multiple drivers of urbanisation and smart cities, regulation, increasing population and industry demand, the drive for more efficient water processes and systems, and the increase in fracking and desalination plants will create significant and long term international market opportunities within the water and wastewater market globally. This report has looked to identify the target opportunities across these growth areas for the Scottish company base in the selected markets.

Targeting the right market with the right offering will be vital and geopolitical sensitivities are part of the market risk profiling that must be assessed – as is ease of access, effective and established routes to market, and the support infrastructure available to companies in market, as set out in the Initial Scoring Matrix for the Stage 1 markets in Section 5 and Appendix 2.

From the international market overview carried out, it is clear some markets present significant opportunities together with more immediate and acceptable risk profiles for Scottish companies,

whilst others have even greater potential but require the businesses to gain confidence and overcome a number of barriers to doing business in the market.

Based on the above, the markets and market regions which were selected at Stage 1, and for which individual market profiles were developed as set out in Section 5 of the report, were as follows:

- Central Europe
- Southern Africa
- China
- India
- Ireland
- USA & Canada
- South East Asia

Before we begin to consider the individual market profiles, and then from this, the four identified markets where in depth research was undertaken to identify the specific export opportunities and routes into market for Scottish companies, it is worth considering briefly the approach to export markets from the perspective of the Scottish companies themselves.

This report seeks to match the international market opportunities with the Market Opportunities Report produced by Innovas which looked more widely at the capability and make-up of the Scottish Water and Wastewater sectors, and using a detailed survey, it considered the export intentions and experience of Scottish based companies in the sector.

The next section builds on the work by Innovas and summarises the additional feedback from a selection of the companies in the water and wastewater sectors, which we have sought to ensure that the final recommendations in the report both reflect the international market opportunities and the Scottish capability. Where possible the export market opportunities identified are matched against the capability and export readiness of companies in the sector.

4. Overview of the Scottish Company base in Water and Wastewater Sector

The Innovas Report identified that there are 135 direct companies in the Scottish Water and Wastewater sector, as per the definition used and outlined in the Introduction Section. Also we are aware that there are also a significant number of large engineering companies and smaller specialist technology and product development and service companies who supply to the sector but are often not exclusively focused on the water and wastewater sector. However, as these are indirect firms, we have concentrated on the 135 direct companies within the Sector.

The analysis of the broad split of activity across the sector from the Innovas Report is as follows:

- 52 companies supply some form of equipment for water supply and wastewater treatment;
- 39 of these companies design and manufacture this equipment;
- 24 companies design and manufacture a range of pumps, valves and pipes for the sector;
- 41 companies provide services and products in the field of water testing and monitoring;
- 15 companies are involved in products associated with the smart management of water (i.e. instrumentation including sensors)

Given these direct companies are developing products and are therefore likely to have the potential to export, the analysis is based on the premise that firms currently not exporting can be persuaded to seek to enter international markets. The Survey analysis however showed that only 49% of the companies surveyed by Innovas are currently exporting, the majority to the European (both Western Europe and Central/Eastern Europe) and Middle Eastern markets and the Far East, but also to other markets either directly or through international partnerships.

From the Survey analysis, it can be seen that when intentions of the firms are taken into account that the figures increase from the 49% already exporting to a total of 83% of surveyed businesses planning to export (either continuing or starting to export) in the future.

Also a number have developed their export activity through international aid contracts and off the back of the oil and gas industry expansion into international markets. The Scottish companies involved in the sector export to a wide range of international markets given the mix of technologies and specialisms across the company base.

There is also a substantial and growing academic and research knowledge base for the water and wastewater sectors in Scotland. Many of Scotland's Universities have centres of expertise in the different aspects of water resource and management, and are continuing to develop their capacity in these areas, developing international projects and partnerships.

CREW, the Centre of Expertise for Waters, was launched in April 2011 as a partnership between the James Hutton institute and all Scottish Higher Education Institutes, to provide a focal point for connecting research and policy on all aspects of water and water management. Whilst the research focus to date has been mainly targeted within Scotland, the opportunities to export and develop international research partnerships, and knowledge transfer, continue to grow.

The Scottish Government Hydro Nation Initiative was established to support the development of Scotland's hydro economy and to maximise the economic benefit of Scotland's abundant water resources. It also seeks to raise the international profile of Scotland as an international leader of water management and governance. It is facilitating a number of water related adaptation projects in Africa, while Scottish Water International is developing and working on major water projects across a number of international markets including Poland, Australia, Canada, India and Qatar.

The planned Water Innovation Service, currently at procurement stage, is intended to support Scottish companies to develop their products and services for international markets, and assist companies to identify and develop international market opportunities.

The companies interviewed as part of this research project, (Appendix 1), recognise and are looking to capitalise on the international market opportunities open to them, and many of the companies spoken to have successfully developed a significant niche in export markets such as Dryden Aqua, Panton McLeod and Biomatrix.

In many cases, the companies have been able to successfully develop export markets to date themselves through the unique technologies, products or services they provide; often through initial direct approaches from international customers and intermediaries; successfully becoming part of the supply chain of international Tier 1 and 2 supply companies who are supplying into the water industry globally, or through existing links and contacts in associated sectors such as engineering and the chemicals sector.

Collaboration opportunities across the company and research base to exploit international opportunities appear relatively rare at the present time, and many of the companies feel more export opportunities, particularly into new markets and through the international aid frameworks, could be opened up through greater collaboration between Scottish Water and Scottish Water International and the wider base of supply companies.

Unsurprisingly given the nature of the industry and the international marketplace, the companies interviewed through this research project, identify the most common barriers to fully exploiting the international market opportunity as:

- Defining the specific market opportunity and route to market in new export markets
- Identifying the right local partners and distributors/agents for each export market
- Understanding the specific local regulations and legislation of the export market for their product or service
- The costs of any product adaptation, and establishing an on the ground presence in key export markets

These areas are also reflected in the Innovas Report findings, which also highlights the lack of internal company resources and the financial investment required to prime exporting activities. All these export issues are explored in further detail in the International proposition (Section 7) of this report when we consider how best Scotland's water and wastewater sector can position itself for international markets, and the conclusion which looks at how companies can be best assisted to

develop their export capacity, and to identify and develop effective market entry and development routes into the international markets.

The responses from the individual companies have also assisted in the prioritisation of the different geography and market opportunities, and in terms of the areas of market research and knowledge which are most relevant and useful to allow companies to plan to make individual investment and resource decisions for each export market. A listing of relevant conferences and exhibitions is attached as Appendix 3 matching the main Scottish interests in the target markets.

The Innovas Consulting research also highlighted a significant optimism across the company base in terms, which given the high export rates (both existing and planned) can be attributed to companies developing and exploiting future international market opportunities, with over 90% of the companies surveyed forecasting growth over the coming years. There were high levels of interest particularly in terms of opportunities in the more developed markets of North America and Asia as well as the more commonly targeted European markets, and in less developed countries experiencing high and concentrated population growth such as India.

5. Regional and Market Profiles

This section of the report sets out the main research findings from the initial selected geographical market areas selected for Stage 1 of the market research. This initial research stage considered a wide geographical spread of overseas market opportunities highlighted through the international market overview.

The market areas identified were discussed and agreed with SDI/SE and HIE, and sought to build an initial overview of each market, its economic outlook and trade patterns with the UK, the ease of doing business in the market, and any specific challenges and opportunities in the water and wastewater market sectors. The details of each market review and an initial ranking table for the markets are set out in Appendix 2 of the report.

The following market and market regions were selected for Stage 1 research:

- **Central Europe** – The primary focus of the research was on the Czech Republic, Hungary, Poland, Slovakia, Slovenia and Ukraine. It was also decided to include three Western Balkan countries, Croatia, Serbia and Albania, in recognition of the potential in the water and wastewater industry as these countries make progress towards EU accession (and in the case of Croatia, as a new EU member state).

  The markets in Central Europe presented a range of opportunities, largely driven by the historical under investment in water and wastewater infrastructure and treatment. The harmonisation with EU directives was driving investment opportunities in the majority of the markets, with Poland particularly investing heavily in its water infrastructure and systems over the next 5 year period.

- **Southern Africa** – For the purposes of the research, this was broken down to include a selection of countries from Southern Africa, including South Africa, Malawi, Zambia and Madagascar.

  Africa remains a large and diverse continent and the logical entry point to Africa for exporters is the Southern Region which is currently seeing large infrastructure investment. The primary issue remains rural community access to adequate water and sanitation services, with also a number of infrastructure projects underway, particularly in South Africa which could offer opportunities to the Scottish water and wastewater sector.

- **China** - China has huge challenges to improve water and wastewater service provision. It has a large proportion of population, but a small percentage of the world's water resources. The scale of the market opportunity in China is significant but less well understood are the specific market opportunities which Scottish companies could exploit.

The twin drivers of significant urbanisation combined with rising environmental awareness ensure China will continue to be an opportunity growth market – also in terms of irrigation systems and development – however the market, particularly for smaller companies, remains very challenging particularly in terms of corruption and transparency.

- **India** – India has a fast growing population without adequate access to water and sanitation services and is facing major challenges ahead in the provision of public services. There is an increasing demand in countries like India for tried and tested western technologies, albeit almost always delivered through local partners with varying capacity and capability.

  India has a number of trade barriers, but also tremendous and targeted opportunities for the sector, with the significant activity of the donor aid community in India (donor aid is defined by the OECD as financial flows, technical assistance, and commodities that are designed to promote economic development and welfare as their main objective, and are provided as either grants or subsidized loans) providing another strong potential route to market, ie. through aid funded projects by donor countries and the multilateral development banks. Specific opportunities are identified in water treatment, irrigation, and the infrastructure required for the increasing urban areas; and a number of companies are now exploring the PPP marketplace in particular.

- **Ireland** –The geographical proximity of Ireland makes this a potentially attractive market for Scottish companies, and the recent incorporation of Irish Water offers a number of opportunities for Scottish companies to engage in the market more cohesively.

  Irish Water will bring the 34 Local Authorities together under one roof in terms of the provision of water services and infrastructure, as the national service provider, allowing Scottish companies to more easily engage and access the market opportunities– particularly given the structure of Irish Water is modelled on Scottish Water.

- **USA & Canada** – The USA is the largest economy in the world with a very strong and developed, and highly competitive, water and wastewater market – which in most instances needs to be approached at a regional and State level. However a number of Scottish companies are active in this market and succeeding in gaining significant export business.

  Canada reflects the wider North American opportunity and provides an easier access to market in many instances. Canada is rapidly developing its water infrastructure and management processes presenting a range of business opportunities for Scottish companies.

- **South East Asia** – Singapore, Malaysia and Thailand. While there are opportunities across South East Asia, the research focused on the most developed countries in the region.

Singapore brings a number of opportunities particularly in terms of water sustainability and security, and as a developing hub for water technology innovation and grey water re-use. Malaysia and Thailand are less advanced than Singapore but are also investing in green technology in terms of water management and infrastructure, and the treatment of wastewater giving the increasing urbanisation of the population.

Alongside the geographical review of markets, in terms of the market subsectors, the opportunities were broadly split as follows, based on the Innovas Report:

- Sensors and monitoring equipment: Far East, North America and Western Europe
- Water supply and wastewater treatment: Central Europe, Asia and Africa
- Temporary water solutions: Africa and the Middle East

The main points from each market review are captured and set out in Appendix 2. The markets were initially ranked against a set of agreed criteria and discussed and reviewed with SDI, SE and HIE at the conclusion of the Stage 1 research. A summary of the ranking table is included at the start of Appendix 2, and the criteria used to assess the different markets is summarised below:

- Current Scottish company export experience of the market;
- Regulatory regime and drivers which will impact on Scottish companies;
- Legal and corporate legislation including tax, local content and visas;
- Ease of doing business in the market, and current economic outlook for market;
- Available support in-country for Scottish companies;
- How well Scotland's strengths are perceived to match the market needs and opportunities.

Given the work to understand fully the internationalisation potential of the Scottish water and wastewater sector is still at a relatively early stage, the Review Group on conclusion of Stage 1 were keen that the research still kept open the opportunities in different geographical markets. This would allow a deepening of the understanding and timescales for the development of each export market, alongside the initial market research findings and ranking from Stage 1 as set out in Appendix 2.

The following four markets and market regions were therefore selected for more detailed research into the international export opportunities available to Scottish companies:

- Canada
- India
- Poland
- South East Asia – Singapore, Malaysia and Thailand

Given the relative diversity and competitiveness of the US market, Canada was selected as the primary North American market for further research given particularly the opportunities in the public health market, and the rapid development underway in the country to develop its water infrastructure and management processes. These together present a range of potentially strong business opportunities for Scottish companies, set out in more detail in the following sections.

India was viewed as a market with significant opportunity, with a rapidly expanding population increasing the pressures on the existing water and wastewater infrastructure in the country's urban centres, and also providing other specific market opportunities in terms of water treatment technologies and irrigation. A number of Scottish companies are already active in India through overseas partners and also through international aid contracts, and the Innovas survey data also indicated that a number of companies are seeking to build their exports to India.

Of the markets in Central Europe, Poland was felt to offer the most immediate opportunity for Scottish companies, particularly in terms of the level of investment going into its water infrastructure at national and regional level, and Scottish Water International has good links into the market. It also provides a potential and easier future access point to other markets in the Central European region.

Finally, Asia covers 8.6% of the world's land area and is home to 60% of the world's population. The South East Asian markets selected are ones where there is significant demand for new technologies and innovation in water processing and grey water re-use where Scottish companies can offer a range of expertise. All three selected markets in the region also face significant pressures in terms of wastewater treatment given increasing urbanisation. SDI has also started to look closely at this market region for the sector, with recent meetings held with the head of the Public Utilities Board in Singapore.

Section 6 provides the more in depth market profiles developed for each of the above markets.

6.0 Priority Market Profiles

6.1 Canada

Introduction

The Canadian market is experiencing significant growth in the water and wastewater sector as shown in Table 1 on the following page, and in associated sectors such as wider infrastructure and construction. It is forecast that there will be 5.7% annual capital growth through till 2018 in the Canadian Water Market. There are a significant number of water and wastewater infrastructure projects likely to go ahead in Canada over the next few years, both at the provincial and municipal level.

Figure 8: Canada Map

This is reflective of the infrastructure deficit in the sector with projects identified for establishing and upgrading flood control systems in Alberta, Manitoba, Ontario and Quebec; the upgrading of wastewater treatments (both industrial water treatment and sewerage), and the upgrading of drinking water systems across the country.

The maintenance of water and wastewater management systems is estimated to be likely to cost Canada over $4 billion annually over the next 15 years, and the majority of systems need to be updated. This is accentuated by the fact that Canada uses more water per person than most other countries, but the population pays very little for water use, despite the increasing water usage per capita, and highly concentrated population centres.

Governments in Canada are now moving to integrated ecosystem and watershed management approaches that draw on both sustainable development principles and applications.

Canada Water Market Forecast

Canada ($m)	2011	2012	2013	2014	2015	2016	2017	2018
Utility water capital expenditure								
Water networks	618.6	642.4	657.9	685.7	714.7	762.9	793.8	829.0
Water treatment plants	338.0	354.2	366.0	384.7	404.4	435.4	456.3	479.8
Water resources ex. desalination	115.5	111.9	106.6	102.7	98.4	95.9	91.7	87.6
Seawater and brackish water desalination	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total utility water capex	1,072.0	1,108.5	1,130.4	1,173.1	1,217.5	1,294.2	1,341.8	1,396.4
Utility wastewater capital expenditure								
Wastewater networks	447.3	464.7	474.7	481.8	494.5	520.4	545.4	558.6
Wastewater treatment plants	208.2	220.9	231.4	257.3	281.2	308.3	320.7	322.9
Sludge management	64.0	74.1	79.1	82.4	92.1	106.9	116.4	126.7
Total utility wastewater capex	719.4	759.7	785.2	821.5	867.7	935.7	982.5	1,008.2
Utility capital expenditure breakdown								
Design and engineering	131.1	136.8	140.2	146.9	153.2	163.9	170.9	176.5
Civil engineering	907.3	943.0	964.2	997.7	1,039.4	1,106.5	1,149.5	1,183.7
Regulatory & professional (including permits)	22.9	23.5	23.6	24.2	25.0	26.4	27.0	27.4
Equipment	730.1	764.9	787.6	825.9	867.6	933.1	977.0	1,017.0
Total utility capex	**1,791.5**	**1,868.2**	**1,915.7**	**1,994.7**	**2,085.2**	**2,229.9**	**2,324.3**	**2,404.6**
Utility operating expenditure								
Water opex	1,056.7	1,082.6	1,109.2	1,136.3	1,164.2	1,192.7	1,221.9	1,251.7
Wastewater opex	795.5	821.8	848.9	876.9	905.8	935.6	966.4	998.3
Total utility opex	**1,852.2**	**1,904.4**	**1,958.1**	**2,013.2**	**2,070.0**	**2,128.3**	**2,188.3**	**2,250.0**
Industrial water capital expenditure (ex. construction)	**597.2**	**722.6**	**809.9**	**865.4**	**868.6**	**820.7**	**884.3**	**943.4**

Table 1: Source: Global Water Market 2014, from the publishers of Global Water Intelligence

Overview of Canadian Water and Wastewater market

Canada is rapidly developing its water infrastructure and management processes which in turn presents a range of business opportunities for Scottish companies in these sectors. In particular there are a number of specific sub-sector market opportunities as follows:

- Smart Flood Protection and Sustainable Urban Drainage Systems
- Soil Remediation
- Membrane Solutions
- Smart Management and Instrumentation

Smart Flood Protection & Sustainable Urban Drainage Systems

Floods are the most frequently occurring natural hazard in Canada. Indeed, the Canadian Disaster Database suggests that there have been 241 flood disasters in the last century. In Ontario alone, there were five flood disasters between 2000 and 2009.

In 2002 and 2004, the City of Peterborough was affected by severe rainfall, with the more recent episode costing approximately Canadian $87m in insurance pay outs and Canadian $25m in disaster

relief. More recently, in June 2013, Alberta experienced significant flooding, resulting in one of the most expensive disasters in Canadian history. The cause was heavy rainfall – up to 325mm or 12.8 inches in less than 48 hours – which fell on already saturated ground and caused several rivers to flow up to 10x their normal rates. The flooding cost the insurance industry Canadian $1.7 billion.

This has led to increased opportunities for both smart flood protection and urban drainage systems. For the former, there are potential for flood mitigation projects across the country which add layers of resiliency against future floods and reduce down-stream impacts. One of the key challenges for such initiatives is to balance water supply with water needs, given the potential risk of drought. Projects at the community-level are also being promoted. However, there are is a requirement for enhanced overall watershed management, modelling systems and warning systems, flood risk management policies and erosion control, as well as a mitigation infrastructure projects.

Storm water management has become an increasingly challenging issue, particularly for urban communities in Canada – rainwater cannot follow its natural patterns, therefore increasing the runoff and excess can result in changes to groundwater resources and flooding. As such, there is an increased demand for solutions that control the volume and quality of runoff.

Low Impact Development (LID) are approaches to land development that work with nature to manage storm water as close to its source as possible. LID projects are a set of site design strategies that minimise runoff and distributed, small scale structural practices that mimic natural or predevelopment hydrology. There are various LID techniques and the benefits include the protection of down-stream resources, improved water quality and reduced pollution and erosion.

In terms of approaches, Canada has placed emphasis on the treatment train approach (implementing a combination of several solutions) and the use of multiple types of controls to address environmental issues. Further, there is a move towards a more integrated and decentralised approach, where sustainable techniques may have to be installed across a combination of sites (e.g. residential properties, roads, parks, etc.) under both public and private ownership and/or control.

In light of the recent significant floods, better collaboration between different levels of the Canadian government has been necessary. In addition, Canada has had to look internationally. For example, Public Safety Canada is seeking to develop a National Disaster Mitigation Program. Part of this programme involves exploring international best practice for flood mapping, and identifying international experts (academic, professional, political) as part of a broad-based consultation process. As Canada seeks to recover and prepare against future natural disasters, there will be greater potential for international collaborations to exchange information and experience.

Soil Remediation

As a result of Canada's strong reliance on natural resource extraction, there is a considerable amount of work required in cleaning contaminated sites, which pose a serious threat to health. The extracting and processing of non-renewable sources and the waste or activities from renewable resource use (e.g. agriculture, forestry, fisheries, tourism, recreation) have severely impacted on the landscape. This has resulted in the demand for soil remediation: the process of removing, reducing

or neutralising industrial soil, sediment and water contaminants that threaten human health and/or ecosystem productivity and integrity.

One of the preferred methods for the remediation of fuel contaminated soil today is land farming. This is particularly true for remote sites because the method requires minimal equipment and is therefore by far the lowest cost option. In the case of federal contaminated sites, government estimates that 85% of clean-up projects across the country will cost less than Canadian $250,000 to remediate.

A much smaller number of remote sites in northern regions of the country will cost significantly more to remediate. These include Port Hope in Ontario, where 1.3 million cubic metres of remediation is required on low-level radioactive waste, and in Yellowknife, where a disused mine site has 237,000 tonnes of arsenic stored underground.

To highlight the scale of the challenge, a report issued by the Canadian Environmental Labour Market (ELM) Research can be cited. The report, issued in 2007, declared soil contamination as an area for massive employment growth, estimating at an “extreme minimum” that over 14,300 jobs would be required for the clean-up effort of under 16,000 of the 28,000 non-federal sites in the period of 2006-2009.

To address the issue of soil remediation, the Government of Canada in 2014 committed $3.5 billion over a 10-year period through the Federal Contaminated Sites Action Plan for the clean-up of federal lands.

Membrane Solutions

Membrane technology is increasingly being used as a way in which to treat highly charged wastewater. There are four types of membrane technology, the use of which depends on the size of the particles/molecules to be removed: microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

	Microfiltration	Ultrafiltration	Nanofiltration	Reverse Osmosis
Size of Particle	> 0.1 µm > 500,000 Da	0.1 - 0.01 µm 1,000 - 500,000 Da	0.01 - 0.001 µm 100 - 1,000 Da	< 0.001 µm < 100 Da
Type of Particle	Suspended particles Colloidal haze Oil emulsions	Macro molecules Bacteria, Cells, Viruses and Proteins	Micro molecular organic compounds	Ions

There has been high-growth in membrane filtration in the production of drinking water. This is due to increasingly stringent regulations for water quality, but also the declining costs of the technology.

It is suggested that the growth rate of membranes in Canada is out-pacing the U.S. This can be attributed to several factors, one of which was the serious outbreak of water-borne E. Coli in Ontario in 2000, which lead to a greater regulation, with emphasis being placed on water quality and removing pathogens from water. Another driver has been the large population growth away from sources of drinking water, which has required expansion of treatment plants.

As a result of these factors, some of the largest membrane filtration systems in the world are already in operation in Canada. One of the largest players is Zenon, who worked with the Lakeview Water Treatment Plant to produce the largest membrane filtration system – with a total capacity of 1080 ML/d.

Low-pressure membrane filtration is generally now considered a robust and mature technology in Canada. However, newer generation membrane modules are being installed on a significant scale with limited long term O&M data from full scale plants. This makes it difficult to substantiate economic evaluations used in the selection of the membranes. It has been argued that more work is necessary to benchmark the long term performance and O&M cost of these newer membrane filtration technologies against the cost of other approaches to treatment (including older generation membranes as well as conventional treatment), to facilitate informed treatment decisions.

Smart Management and Instrumentation

Ontario is one of the first in the world to have achieved a jurisdiction-wide rollout of smart meters and is now seeking to deploy a 'smart grid' under the Green Energy Act. This legislation has defined the goals of smart grid as enabling increased renewable energy, improving demand response and load control as well as supporting emerging and innovative technologies. The overarching goals are to promote economic efficiency and viability while ensuring consumer protection. In addition, the smart grid will need to be adaptable to accommodate electric vehicles and energy storage.

With access to accurate and timely information, water utilities are now able to more effectively discover leaks, manage customer peak demand, and monitor compliance with local water restrictions. As a result, many utilities are constructing conservative business cases that foresee a relatively short payback periods for smart metering investments. It is suggested that rapidly falling prices and the multiple advantages to both customers and utilities make the systems a compelling choice.

Ontario also serves as an example of what might be possible in the future. The Southern Ontario Water Consortium is a collaboration of private-sector organisations, universities, and municipalities. IBM is the lead industry partner and provided a Canadian $20 million contribution, with a further Canadian $19.5 m and Canadian $9 m being provided by the Federal Economic Development Agency for Southern Ontario and the Ontario Ministry of Research and Innovation, respectively. The result will be that the complete Great River watershed will be monitored and managed – from the headwaters all the way to the end users.

Canada's Department of Foreign Affairs, Trade and Development (DFATD) has identified the smart grid as a key sector for export, trade, and international collaboration. Several trade missions to Europe have been organised and there are a range of federal funding programmes which are aimed at enabling Canadian organisations in the water industry (particularly in relation to technology) to collaborate and explore opportunities at an international level.

Export Issues and Challenges

Some of the key issues and challenges within the sector specific to the interests of the Scottish water and wastewater sector include:

Smart flood protection with SuDs (Sustainable Urban Drainage) for road and surface drainage:

- Main drivers: environmental impact and water contamination
- Often referred to as Low Impact Development in USA and Canada
- Emphasis more on conserving and utilising natural features.
- Averse to re-builds or implementation but open minded to utilising technologies in new build projects.
- Although this is a hot topic in Canadian renewable discussions, there has to date been a low rate of adoption.
- Opportunities are most prominent in areas where significant changes are already taking place. Partnerships with large scale builder/contractors will be important for success.

Soil remediation:

- Since the Federal Contaminated Sites Action Plan program was introduced in 2005, the federal government has spent about $1.5 billion on assessing or remediating nearly 10,600 federal contaminated sites, or about half of the sites in the inventory, thus leaving the remaining 50% sites as potential targets.
- Energy producers actively remediate sites individually as well.
- As of 2014 27.1% of industry establishments in Canadian soil remediation will be in Alberta. This is due to the prominent oil and gas sector. Ontario follows closely behind with its broad range of production facilities.
- Major opportunities lie in partnerships with facilities that have a high risk of contaminating surrounding soil and becoming a contractor for government efforts.

Membrane solutions:

- Currently there are multiple small corporations catering to households with membrane solutions.
- There are also multiple cities that have adopted membrane technology in their main water treatment plants. This is mainly due to stricter Canadian regulation regarding Giardia and Cryptosporidium.
- Opportunity may be present in the near future to continue this trend to the remaining Canadian cities. Especially since there has been demonstrated success in some sector leaders (Thunder Bay, Kamloops, Halton Ontario).
- Currently Zenon has been the main provider of large scale membrane projects in the market.

Smart management and instrumentation:

Smart pipes and smart metering:

- Push back from some Canadian groups who fear the radiation from wireless signals has stalled the industry.
- The province of Ontario has adopted smart meters and time of use technologies for all of their citizens and small businesses.
- SaskPower in Saskatchewan has approx. 105,000 smart meters in the province. British Columbia has adopted the technology and also had issues with the system.

Federal regulations are also a key market driver and recently the Canadian Government has focussed efforts on remediating and preventing wastewater. Regulations such as the Wastewater Systems Effluent Regulation, are forcing companies and municipalities to take preventative measures. Refer to http://laws-lois.justice.gc.ca/eng/regulations/sor-2012-139/FullText.html

Owners of wastewater systems submit either annual or quarterly reports. Recent measures to place pollution prevention plans for inorganic chloramines and chlorinated wastewater effluents have also put pressure on the industry.

There are a number of important Legislative Acts which have continued to drive all of the Water and Wastewater markets to some extent including the Canada Water Act, Department of the Environment Act, Canadian Environmental Protection Act and the Fisheries Act.

Federal Acts generally are centred on companies' receiving permits to engage in activities that affect the condition of water in major systems. This is particularly the case when it may contaminate and harm the environment; and it is also the case that no work shall interact with navigable waters without a minister's permission, to also ensure fish habitats are not affected.

Provinces are primarily in charge of drinking water treatment, distribution and wastewater treatment. They can allocate regulation of specific areas to municipal governments. Most provinces have strict regulation on what 'reclaimed water' can be used for.

Key regulations for Scottish companies to be aware of include:

Alberta regulations:

- Alberta Water Act
  - Requires approval for any activities disrupting natural habitats, soil, water, vegetation.
  - Written authorization from a director is required to tamper with or build storm drainage facilities.
  - Permission through the Public Lands Act is required when water flows to a major watercourse.

British Columbia regulations:

- The key regulations include Water regulation, and drinking water protection regulation.

Ontario regulations:

- Includes the Clean Water Act, Safe Drinking Water Act, and the Minister of Natural Resources Water Management Regulation.

Routes to market

There are a considerable number of information sites and support organisations available to assist Scottish companies entering into the Canadian market. The Canadian market has generally been an open one for exporting companies, and this will become even more the case as the EU/Canada CETA agreement is put into practice. Information about identified infrastructure projects, and new federal funding streams targeted at the sector are also widely available through most provincial governments.

One example of how Canada is taking a lead on Innovation within the Water and Wastewater Sector is by the creation of an organisation called Water TAP (The Water Technology Accelerator Project) in Ontario. Water TAP is an innovative project set up in 2010 and is attracting attention globally for its effective impacts, thanks to the unique support infrastructure in the province of Ontario.

Ontario has more than 900 water industry companies, supported research centres, incubators, accelerators and programs that encourage innovative water and wastewater technologies and services. Water TAP is the only non-profit organization whose sole focus is the growth and prosperity of Ontario's water sector and it is already supporting Ontario's water tech entrepreneurs and the innovation-hungry customers who need their technologies. (www.watertapontario.com)

Waterlution is another Canadian organisation worthy of note. It was created as an educational Institute in 2003 in Ontario to engage young leaders, organizations, businesses and communities in fostering pattern-breaking and pattern-making change towards inclusive, sustainable ways to manage water. Waterlution's purpose is to inspire pattern-making and pattern-breaking change towards a healthy and sustainable relationship with water.

Within Waterlution is the Canadian Water Innovation Lab which seeks to act as a catalyst for innovation, opportunity and change to the Water sector both in Canada and across the globe. Again Scotland has had embryonic discussions with Waterlution to assess what opportunities may exist to provide a platform for the leaders in the Scottish water and wastewater sector to develop themselves and their companies on the global stage.

Waterlution would be an interesting partner for the water sector in Scotland to develop closer links with. There are multiple potential benefits of such a potential collaboration which include knowledge sharing with Scottish technology providers, networking with our industry leading stakeholders to keep abreast of developments as they happen, and also a close fit with what the Scottish Government is developing with Hydro Nation and the proposed new Water Innovation Service.

A close working relationship with Waterlution would provide added benefits to Scottish companies who are looking to partner with Canadian organisations as part of the Canadian procurement process, which is mentioned later in the report, as Waterlution may be able to facilitate high level and appropriate introductions for Scottish companies.

Some key resources for companies looking at and accessing the water and wastewater market opportunities in Canada are outlined in the following pages:

Inventory of Major Projects

http://www.albertacanada.com/business/statistics/inventory-of-major-projects.aspx

The Inventory of Major Projects (IMAP) is produced by Alberta Innovation and Advanced Education to assist firms in identifying potential supply opportunities, as well as informing Albertans on the status of projects in the province valued at $5 million or greater. There are a range of industries and sectors to filter by, with 'infrastructure' displaying a range of water and wastewater projects. There is also the ability to filter projects by the stage of their development, which may assist in finding potential opportunities.

MERX

http://www.merx.com/

MERX is Canada's leading electronic tendering service, with a database of opportunities for:
(1) Canadian public tenders,
(2) agencies, crown and private corporations,
(3) U.S. tenders, and
(4) private construction projects.

The site allows you to search and bid on a range of public tender opportunities and to find potential partners. As with the IMAP database, MERX allows users to search for either previous or open projects.

Civic Info BC

http://www.civicinfo.bc.ca/index.asp

This website is the Cooperation service for British Columbia, listing a range of bid and tender opportunities, grants, and suppliers for those that have an interest in the local government sector. This site has a relatively smaller database, but does list some opportunities for water and wastewater and related industries. For other services on the site, such as searching for documents, available grants or organisational partners, the site has a lot of content and decent search tools.

Water Canada

http://www.WaterCanada.net/topics/events

Water Canada maintains an up-to-date list of events that happen across a range of water sectors. In addition, the "buyer's guide" has a very comprehensive list of distributors, manufactures and suppliers for a wide range of water sectors.

Canada Water Week

http://canadawaterweek.com/

Held annually on the 3rd week of March, Water Week coincides with World Water Day. The 2014 campaign focused on raising awareness of watersheds. This site may give insight into opportunities and ideas on how to engage with local communities and to raise the profile of Scottish capability.

Environment Canada Wastewater

http://www.ec.gc.ca/eu-ww/default.asp?lang=En&n=F0CFE5F0-1

Maintained by the Government of Canada, this page holds a list of contacts for wastewater contact points in the government.

Municipal Service and Suppliers Association

http://www.wcmssa.net/

The MSSA is an association of organisations who seek to supports the development of alliances in the water sector.

Water Tap

http://www.watertapontario.com/asset-map/funding/programs/federal-funding

This site has a comprehensive list of information relating to funding for water-relating projects, including details of federal and provincial funds, tax incentive, and insight into funding trends. Whilst having a focus on water technology, the information listed may be of relevance to others interested in the broader Canadian water sector.

Metro Vancouver Local Authority

http://www.metrovancouver.org/services/water/Pages/default.aspx

From the Metro Vancouver local authority, this site acts as a centralised resource for documents and has a wide range of publications such as government action plans, fact sheets, reports and studies on water and wastewater.

Master Municipal Construction Documents Association

https://www.mmcd.net/

Aiming to promote a standard approach to construction contracts and documents, the MMCD site has numerous resources to aid those in finding out best-practice when it comes to creating municipal-level tender documents.

Professional Engineers and Geoscientist of British Columbia & Engineers Canada

https://www.apeg.bc.ca/Member-Directories/APEGBC-Membership-Directory

http://www.engineerscanada.ca/

Both of these sites cater for engineers, and contain membership directories which may assist in searching for partners or suppliers in Canada.

There are a number of Government Procurement portals in Canada, some of which are outlined below. A review of the sites below will provide companies with a very good picture of the emerging contracts and potential opportunities and partners in the market.

British Columbia

Procurement templates:

http://www.pss.gov.bc.ca/psb/procurement/procurement-templates.html

Procurement policy and procedures:

http://www.pss.gov.bc.ca/psb/procurement/procurement-policy-and-procedures.html

Public Works and Government Services Canada (PWGSC)

PWGSC procures goods and services on behalf of departments and agencies at best value.

Links & Resources for buying and selling:
http://www.tpsgc-pwgsc.gc.ca/app-acq/index-eng.html

Database: Opportunities in wastewater
https://buyandsell.gc.ca/procurement-data/search/site/wastewater?retain-filters=1&f[0]=sm_facet_procurement_data%3Adata_data_tender_notice&f[1]=ss_publishing_status%3ASDS-SS-005

Public procurement in Canada – the legal perspective
http://uk.practicallaw.com/4-521-6007?q=&qp=&qo=&qe=

"In October 2013 Canada signed the Canada EU Comprehensive Economic Trade Agreement (CETA), which has significantly opened up provincial, utility and municipal procurements to European suppliers. The Agreement imposes significant standards on the conduct of tendering processes and contract awards on federal, provincial and municipal procurements."

There are a number of not-for-profit associations in the water sector across Canada which provides access to resources and maintain up-to-date lists of events and conferences as follows:

Canadian Water
http://www.cwwa.ca/home_e.asp

Atlantic Canada
http://www.acwwa.ca/

Western Canada
http://wcwwa.ca/

Manitoba
http://www.mwwa.net/index.php

Alberta
https://awwoa.ab.ca/

There are also more formal bodies which companies can engage with in the market for information and a better understanding of doing business in the market such as:

Priority Market Opportunities in Canada

The Canadian market is a promising one in terms of the opportunity for Scottish companies. However there remain certain procurement practices in Canada that tend to favour companies with an established local presence – whether that be through requirements such as the weighting given to local knowledge, for example in Ontario, or indeed the pre-qualification step to prove that companies are prepared to deliver on contracts.

One way which we believe Scottish technology companies could benefit more favourably from the procurement opportunities within Canada is to look to partner with Canadian based partners when looking at tender opportunities. An example of this is mentioned earlier on where an organisation such as Waterlution could be an excellent route for Scottish companies to identify prospective local procurement partners.

Turnaround times on commercial and public tenders can also place overseas companies at a disadvantage. As with all the export markets considered, there is the need to take the time to understand the full business practices in the market, build relations with local partners and contacts, and be open to doing business in partnership with local providers.

Bidding consortia for many of the tendered water and wastewater tenders tend to be formed on a project by project basis, and often include foreign companies and providers who are able to provide relevant experience and expertise.

For public tenders, while the national and provincial levels of government continue to have a major role, the municipal level of government and sector associations is particularly important in the water and wastewater sectors, especially the greater metropolitan regions such as the Greater Toronto area, and Metro Vancouver.

Although Canada as a country remains a significant market the regions of British Columbia (BC), Alberta and Ontario are highlighted in our research as being three of the leading regions in terms of opportunity for Scottish companies in the Water and Wastewater sectors.

Doing business in Canada does not present any major barriers for companies, and both SDI and UKTI have strong representation in the region and can provide significant help. UKTI publish “Business Opportunities” across all sectors in Canada. UK Companies can register their interest online and designate the sectors/markets they are looking at. Further details of support from both SDI and UKTI are shown in Appendix 4.

The Canadian market should be developed on a medium to long term basis to allow key relationships to be built, and to understand the best approach to the numerous market opportunities on offer in sectors where Scotland can bring strong knowledge and expertise as set out above.

6.2 India

Introduction

India became a middle income country in 2008 and access to adequate water has been cited as one of the primary limiting factors on development in the country. The average availability of water is reducing steadily with the fast growing population and water demand is set to increase rapidly.

Figure 9: Map of India Showing Key Cities

Elections in May 2014 have created a new political environment and opportunities for international companies are expected to increase as a result. The increasing water consumption coupled with growing awareness in the country regarding environmental issues, legislation and technology, has fuelled the demand for wastewater treatment.

The new finance minister is expected to bring about reform, and relations with the EU and USA are continually improving. However, a key risk factor for India is escalating tensions between Pakistan and China over shared water resources. The first Union government budget 2014-2015 presents a number of implications and opportunities for the water sector which are outlined throughout this section.

The Indian water sector has been identified as having an investment potential of $130bn by 2030. Estimates state that India's total water and wastewater treatment market alone is worth $420m and is expected to grow annually by between 12% and 18% to 2019.

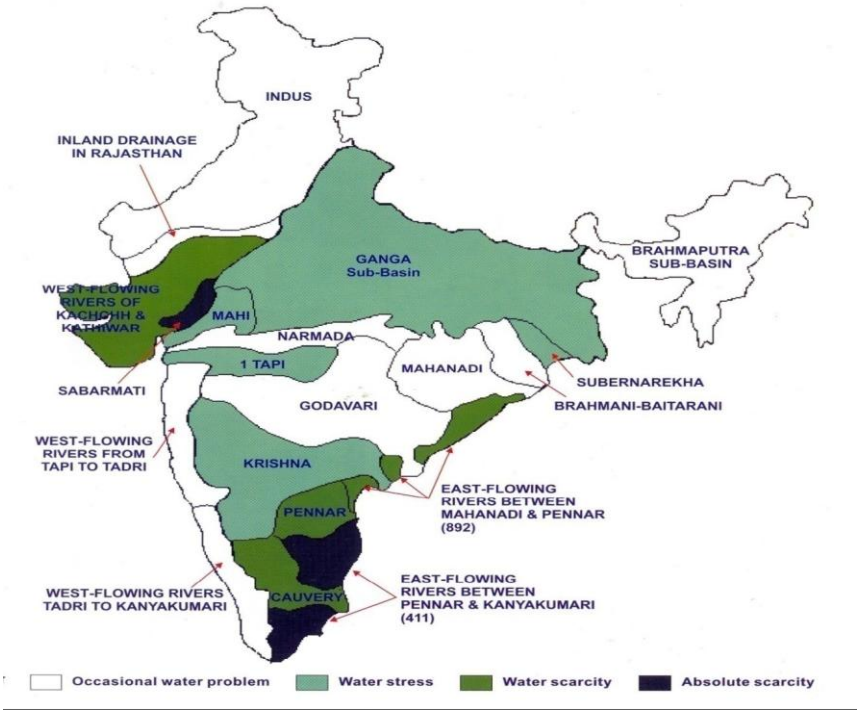


Figure 10: Water Stressed Areas of India; Source: India Water Works Association

The above figure highlights the magnitude of the water supply challenge facing India and the support that will be required to address this challenge.

Water (and sanitation) is a state subject. Each federal state controls, manages and administrates water policy and its implementation individually. There is a complex maze of institutions in every state with different responsibilities.

Relations between rural and urban areas are complex, and so are the coordination of capital investments, operations and maintenance as well as revenue generation and sharing.

The role of the central government in New Delhi is first and foremost to achieve harmonisation and resolve disputes, and this is done primarily through its five-year plans. There are many unresolved issues around water governance with multiple government departments having responsibilities towards water.

For cities, water and sewerage policy is carried out at three levels:

- Central government

- Federal states

- City governments.

There is a clear political commitment from the Scottish Government's International Development Minister to strengthen Scotland's trade ties with India, and a trade mission to India was undertaken from 6-10th October 2014.

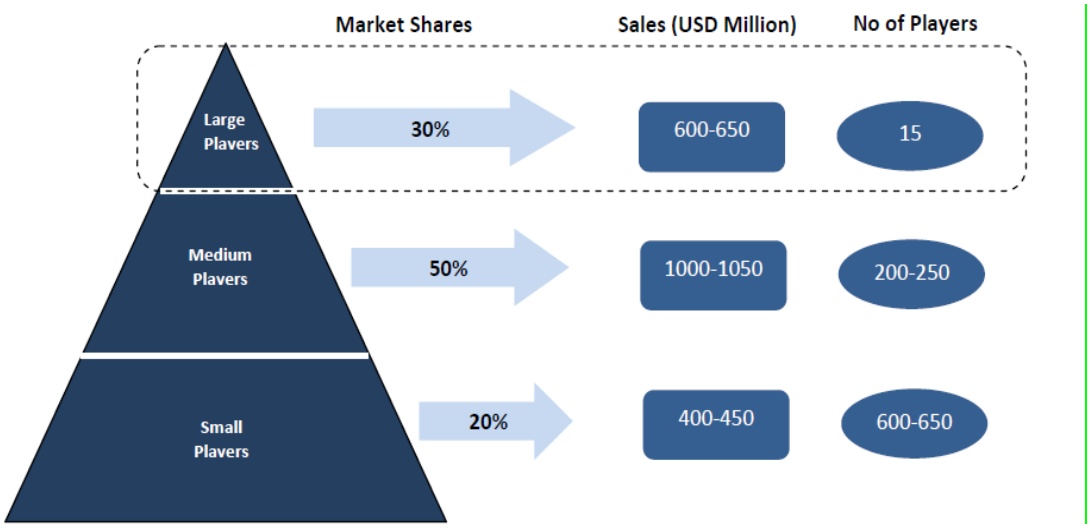


Figure 11: The Indian Water and Wastewater Market; Source: Avalon Global Research

There are more than 500 successful foreign collaborations in India's water and wastewater treatment sector to date. Over 150 US firms have established a presence in the Indian market through their collaborations with Indian counterparts. The US dominates joint venture partnerships in the environmental (water, wastewater and solid waste) market with 33%, followed by Germany with 14% and the UK with 13%.

Overview of the Indian Water and Wastewater Market

An overview of the main opportunities in the Indian market is set out below. As the list demonstrates, the opportunity is vast and companies must target their opportunity carefully, and where there is a good match with the Scottish companies and industry capability this is highlighted against the opportunity.

1. Wastewater and water treatment plants: £0.36Bn has been allocated for the National Rural Drinking water programme over the next 3 years. This is driven by the poor quality of surface water and lack of cost-effective treatment technology. The opportunities for Scottish companies in particular include: technology and expertise on arsenic (especially in West Bengal) and fluoride removal, removal of heavy metals, innovative water recycling, and cost effective water treatment technology (e.g. solar powered, renewable energy powered, package plants for rural areas). Key areas of opportunity in the membrane sector are in technology that can offer low cost solutions to residential markets, and new innovative technology to service industrial users. However, the market is extremely cost competitive with locally fabricated equipment on average around 30% cheaper than imported equivalents. That said, Indian firms have limited capabilities in designing technologies for larger scale water treatment plants.

The water treatment market is evolving from chemical treatment and demineralisation technologies to greater use of membrane technology; thereby enhancing the quality of water available for reuse. Industrial effluent represents the first target for market. The increasing demand for membrane technologies is a result of the increasing gap between demand and supply. In India the demand for membranes is increasing due to water contamination and excessive dissolved solids (DS) in drinking water sources for both the industrial and residential markets. As well as the conventional water and

wastewater treatment markets, membranes are also being adopted by those constructing desalination plants (another area of large growth in India) which further increases the demand.

Opportunities exist for companies involved in the Design-Build-Operate (DBO) of water/wastewater treatment plants. This is a particularly interesting opportunity for those companies with design skills. The main quality problem encountered with ground water in India is due to excess fluoride, arsenic, iron, nitrate, and salinity. High tech water treatment is an area where Scotland has excellent expertise in removal and testing. As an example, Dryden Aqua is working with Indian company SVS Aqua to implement innovative water treatment technologies in arsenic affected water scarce regions in India. The project designs and develops cost effective community based water and wastewater treatment systems to be deployed at pilot sites across India. This is an excellent example of how Scottish companies can be at the forefront of community based rural development projects.

In terms of sewage and water treatment plants, Indian companies are keen to take advantage of technological innovation on offer from international markets. The Indian membrane technology market is expected to exceed $2.8Bn USD by 2018. By the end of 2013 many large global companies had expanded into the Indian water market including GE Water, Aquatech, Wabag, and Siemens, however, the market also has over 500 local manufacturers who would benefit from partnering with international firms. The leading companies operating in membranes market in India are Dow Chemicals, Hydranautics and Hyflux. The presence of these large companies means that innovative solutions and processes will be required if Scottish companies wish to compete successfully in this market.

2. Sewerage networks and Pipeline Rehabilitation: (including consultancy services and technology to reduce unaccounted for water (UAW) and non-revenue water (NRW).

3. Rainwater harvesting: Rooftop rainwater harvesting systems are now mandatory for new buildings in 18 of India's 28 states and 4 of its 7 federally-administered union territories. Some examples of recent projects include: Saint Gobain, Sriperumbudur, (rooftop water harvesting 1,500,000 m3/year); Wipro, Bangalore, (rainwater harvesting, 2254 KL harvested water/year); Hero Honda, Haryana (rooftop for capturing rain 11,080 sq m).

4. Latest technologies which reduce water and energy consumption: and can demonstrate savings for Indian companies that are large water users. A particular area of interest in India is the provision of solar pump sets and pumping stations. Government budget recommendations have set aside £40 million for solar power driven agricultural pump sets and water pumping stations. Highly efficient pumps will be required and also solar driven pumps, which may provide opportunities for some Scottish companies.

5. Supply of package plants: to cater for small hospitals and developing industrial estates and zones.

6. Provision of treatment equipment and chemicals: There is extensive contamination with arsenic and fluoride, depleting groundwater – India is using groundwater at twice the recharge rate. Particular expertise is required in the areas of arsenic and fluoride removal, an area of strength for Scotland. This market segment is expected to grow at a rate of approximately 9% between 2014 and 2019. The major producers and suppliers of water treatment chemicals in the country include Nalco-Ecolab, Thermax India Limited, Vasu Chemicals and Ion Exchange India Limited. The western

region of the country dominates this sector due to existing and planned oil and gas and industrial developments.

7. Design and project management expertise to deliver projects in a sustainable manner, particularly large scale interventions.

8. Institutional strengthening: for government ministries, departments and agencies – this is an area of interest for Scottish Water International.

9. Industrial Expansion: The expanding oil and gas industry and other industry through the development of industrial corridors will result in an increased clean water demand. This sector largely drives the water treatment chemicals market in India. Additionally, the expansion of industrial manufacturing zones, economic and freight corridors around the country will present growing opportunity for the water and wastewater markets.

Scotland's combined strong expertise in oil and gas and water and wastewater provides an excellent development opportunity to be further explored. The Indian government have committed £100m to set up a national industrial corridor authority (NICA) which will have a coordination mandate. Growth in this area has been slow to date, but twenty new industrial clusters are under development. Overall success of this initiative will be heavily dependent on attracting private investment. Associated with this there will be opportunity in areas like efficient water and wastewater treatment, ground water protection, and zero waste discharge.

10. Smart metering – There is an increasing demand for technology advancements in metering to be transferred to India, which matches against the capabilities of a number of Scottish companies.

11. Rural Development – UKTI has highlighted the Shyama Prasad Mukherji Rurban Mission opportunity. This is a new Indian Government programme with the aim to provide urban infrastructure and facilities in rural areas, particularly on the fringes of cities. The opportunities that exist in this area are still developing, but the most prominent will be low cost water treatment technologies, arsenic and fluoride removal (a particular strong area for Scotland), modular treatment plants, solar power driven water treatment, restoration of water bodies (another area where Scottish companies showcase strong skills).

12. Water Purification and Filtration: Poor provision of water by government remains a challenge and this has increased the demand for water purifiers in India. These products are now accessible to middle income groups and an increasing number of rural households in the last 5 years or so. Manufacturers in this field are also developing new products to target specifically the rural households. This area is expected to grow annually at around 15% until 2019.

High metal content in water resources in West Bengal, Bihar, Rajasthan, Orissa, Andhra Pradesh is leading to an increased demand in cities across these areas. Previously India was not seen as a priority market, however advancements in innovative low cost products are now allowing access to rural markets, with a particular example being the offline water purifier. India is a very price sensitive market, with consumers prefer buying low-cost products. This is creating opportunities for small water purifier manufacturers. The global media based water filters market is projected to exceed $12Bn by 2018. Changing trends such as combination water filters, is contributing to the demand for media based water filters in water purifiers market. Most of the water purifier

manufacturers are combining media based water filters along with reverse osmosis and ultra violet water purifiers, creating a huge global opportunity for media based water filters.

An additional area to consider for India is the donor organisations and International Aid Opportunities. The main organisations are outlined below:

Multilateral Development Bank (MDB) Opportunities

Many infrastructure projects in India are financed through supporting loans from the MDBs (World Bank, Asian Development Bank and others). The advantage of working on an MDB funded project is greater oversight in terms of transparency, high quality scope definition and project preparation, projects that meet safeguarding requirements in terms of environment and social issues, and more stringent oversight controls over disbursement of funds. Well established and widely used conditions of contract is another advantage for Scottish companies.

Asian Development Bank - The Asian Development Bank currently has approved 11 interventions in the water and sanitation sector in India since 2013. Many of these relate to technical assistance, including institutional strengthening and capacity development. Several larger interventions that require supplies of equipment for new water and wastewater treatment plants are also included.

Components of approved (financed) projects include: The supply and installation of water meters and supply and installation of pumps for larger scale water treatment interventions.

An important aspect of working on MDB projects is developing linkages with Indian partner firms and demonstrating knowledge transfer in the proposal. Accessing donor markets without prior experience in their complex tendering processes can be challenging. UKTI run regular workshops on accessing the donor markets which are informative and offer networking opportunities with other organisations also looking to develop into this area.

World Bank – The World Bank has made a $5,211m USD loan commitment to India in 2014, rising from $1,334m USD 2013. Some examples of recent project opportunities through the World Bank are below, but there are many more available on the UN Development Business Website for a diverse range of businesses operations:

- Integrated Coastal Zone Management Project: Consultancy for preparation of Shoreline Management Plan, Digha – Sankarpur Stretch, West Bengal, World Bank, 10th November 2014.
- Uttar Pradesh Water Sector Restructuring Project Phase II: Invitation to prequalification for cement concrete lining in lower Ganga canal, World Bank, 22 Nov 2014.
- Pubjab Rural Water and Sanitation Sector Improvement Project, World Bank.

UK Government, Department for International Development (DFID) - All new DFID assistance to India will be in the form of Technical Assistance, or private sector initiatives generating a return on investment. The key DFID opportunities over the coming years will be for the major Scottish consultancy firms offering high end technical assistance skills. An example of an opportunity in DFID's pipeline is the Scoping and definition of SMART cities and conduct of technical, economic and financial feasibility for Smart City Initiatives in Madhya Pradesh. A consultancy assignment, this is

expected to start off in May 2015 and should potentially generate many further downstream technology opportunities as a result of the scoping and subsequent feasibility and as the project moves towards implementation.

Scottish Water International in India

Scottish Water's international consulting arm has been working in India, sharing its knowledge and expertise. Scottish Water International supported an international business school to deliver workshops in Delhi for the Indian Ministry of Urban Development (MoUD). The workshops focused on the structuring of public utilities, with particular reference to the Scottish Water model of public ownership with independent regulation and sustainable financing. Financing models including Public Private Partnerships (PPP), Design, Build, Finance, Operate (DBFO) and part-privatisation were addressed. Scottish Water's links in India provide a good potential opportunity to be exploited by other Scottish Businesses, if collaboration opportunities can be identified and progressed.

Export Issues and Challenges

There are a number of issues and challenges facing India's water and wastewater market which results in a number of specific and potential opportunities for Scottish companies. Although small, the diverse nature of Scotland means that there is extensive experience in supplying water and wastewater services to cities and very remote and rural areas.

Scotland is also at the forefront of advanced technologies such as membrane solutions, package plants, sustainable urban drainage systems, advancements in flood protection and leakage detection, and reduction of non-revenue water (NRW) – a key challenge facing the developing world. NRW is water that has been produced (treated) and is lost before it reaches the end user. This can be losses through leakage, or losses through theft or meter inaccuracy, ie. revenue is not generated because the water is lost.

Environmental regulation is also a significant driver for the sector in India. Enforcement is relatively poor but improving and there is evidence of a rise as per capita income increases. Accelerating industrial growth since the 1990s has led to an increase in environmental awareness and the use of incentives to create opportunities in the sector. The Federation of Indian Chambers of Commerce and Industry provides a range of initiatives including environmental training and capacity building programmes for industry.

Routes to market

Research shows that it may be preferable for new company market entrants to India to focus on the industrial water and wastewater market rather than the government market due to the ease of doing business initially. Once more experienced in the area, government contracts should become more attractive and accessible. There is also an increasing trend to form partnerships with local design, and engineering consultancy firms and use them for marketing and sales and to deliver services in India.

The Government of India has a number of fiscal incentives for pollution prevention and control systems and renewable energy projects. These range from concessions on customs duties, excise duties, income tax benefits, depreciation benefits, and access to low interest finance.

There are some projects in the environment sector that are unique to the Indian market. These include common effluent treatment plants (CETPs), common hazardous waste treatment and disposal facilities (CHWTDF). Many of these projects and several other environmental infrastructure projects such as urban sanitation and municipal solid waste treatment are financed by government agencies, though there is a growing trend in involving private sector through BOT/BOOT schemes.

The UK India Business Council (UKIBC) is expanding its network of business centres across India with a new office opened in Bangalore in July and a planned office opening in Mumbai in December 2014. This will allow a further expansion of the current support available to companies.

International competition is very strong as India is a key priority country for leading companies from around the world. Local manufacturing in a JV arrangement can be the easiest way to take advantage of market opportunities. An alternative is to use technology transfer licensing.

Exporting products through a local distributor can be suitable for very specialist and niche products that are not available locally or where demand exceeds supply, for example, new innovative technologies, and JVs with smaller Indian firms looking to partner. The most common way for a non-resident company to enter the Indian market is FDI, technology and trademark licenses.

The size and scale of business potential in this sector in India is huge and overwhelming, it is therefore important to focus on key opportunities for a particular business area offered by a company. Seeking tailored advice in country is therefore of prime importance; and building up established relationships with trusted Indian partners important.

As with all developing markets, it is extremely important to undertake detailed due diligence on prospective partners, checking financial status, history, connections (very important in this environment), reputation, previous success, business ethics, conduct etc. India has 29 states with differing business practices, regulations, and the different language and culture adding to the complexity.

There are many formalities for start-up in India. For foreign companies it is mostly mandatory to obtain government approvals for incorporating a business or forming a JV. Other considerations include the type of set up, e.g. project office (no approval required), branch office (approval from Bank of India required), liaison office. In India, franchising is the licensing out of a business name, product, technique, philosophy, trademark, etc, for a percentage of the income. This allows more freedom, lower cost and potential for fast growth, however, there are also disadvantages if a partner does not operate transparently.

The international presence and reputation of Scotland - especially with Scottish Water's presence at missions and exhibitions - means that there is also a good respect in India for the expertise perceived to be provided by Scottish companies. A list of potentially relevant conferences and exhibitions in India is provided in Appendix 3.

Several international companies have a presence in the Indian water market. Very large companies such as CH2MHILL, Vivendi (now Veolia Water), Suez de Lyonnaise (Degremont) and VA TECH Wabag all have a presence. Large chemical companies such as Nalco and GE Betz-Dearborn also have operations. Other international companies with a significant presence in the Indian water sector include Thames Water (U.K.), Dow Chemicals, Dupont, Emerson, Hydranautics, Pentair (U.S.),

Grundfos (Denmark), Endress + Hauser, KSB Pumps, Krohne, Netzsch (Germany), Schlumberger/Actaris (France), Amiantit, Aplaco (Saudi Arabia) and Metrohm (Switzerland).

Most major foreign manufacturers of water sector equipment either have a presence in India or have ensured that their products are easily available in India through licensing arrangements. For the leading foreign manufacturers, the technical expertise and know how that they offer is of a similar baseline standard and so success in winning large project orders has tended to be decided on by aggressive pricing strategies, project management and execution skills. This trend is likely to become even more intense in the coming years as more companies enter the market.

Companies from Japan and China in particular have developed strong relationships with Indian counterparts. The following companies have been identified as being interested in forming partnerships with British companies through UKTI, and may offer another route to market for Scottish companies. A brief summary is outlined below:

- Jalakam Solutions Private Limited - Expertise in Asset Management Planning, Water Loss Reduction, Leak Detection, Instrumentation for service monitoring.
- Pennar Enviro Limited- High pressure Condensate Polishing Unit (CPU) for Power Plant, Patented technologies for ERS/ Oil and Gas segment and any patented technologies for WTP/STP/ETP.
- M/s Sai-Tech Enterprises- Special Machineries. Pumps, Agitators, Instrumentation & Controls for water, Wastewater treatment plants as well as for boilers and turbines. This company are keen to expand & diversify by providing representation to the British companies who are looking to expand their business in India. They also deal with instrumentation, process plant equipment, construction equipment, water treatment plant equipment.
- Green Environment Tech-Solutions – Provision of Sewage treatment solutions at decentralised local scale that are economically viable and feasible to be introduced in India.

Another useful contact site for companies looking at the Indian market is the Indian Water Works Association www.iwwa.info/

The EBTC Water Partnership (EWP), http://ebtc.eu/index.php/sector/environment/ebtc-water-partnership is a partnership seeking to facilitate the participation of EU SMEs in the Indian market, and EBTC has become the exclusive strategic partner of the India Water Development Programme (IWDP) for the European Union (EU). IWDP is a structured programme of ETI Dynamics (UK) that aims at increasing the uptake of environmental technologies across India wherever interdisciplinary and multi-stakeholder partnerships for water can be designed.

EWP has been set up to support the deployment of EU technologies and expertise in IWDP's pioneering projects with a vision of establishing effective EU-India collaborations. In short, EWP is a strategic platform for EU businesses, organisations, research institutes and platforms to collaborate, innovate and establish their presence in the evolving India water and wastewater sectors. This may be of interest to a number of Scottish companies and research organisations.

Water Innovation Park (WIP) India was also set up to provide a platform for academia-industry interface, in the field of water technology research. It is a joint venture with Andhra Pradesh Industrial Infrastructure Corporation Ltd. (APIIC). Based on the model of a University-based R&D park this 20 acre site has a wide range of facilities aimed at providing clean water. It hosts BioAsia, an annual international biotech event assisting international water technology companies in creating new business partnerships, academic and industrial collaborations. It is currently in development and is expected to be complete by 2015.

A final key point to note is India's excellent work force – India graduates more engineers than China and as a result many large international companies have developed innovation centres in India, using local graduates to develop effective routes into the market.

Priority Market Opportunities in India

There are a number of market opportunities in India that could be prioritised as the needs of the water and wastewater market set out above are well matched to Scottish company capabilities.

Water, wastewater and contaminated groundwater treatment products and services are all in high demand and represent the main current export area of opportunity for Scottish companies.

The UKTI tender portal highlights a number of opportunities in the Indian water market on a regular basis, and UKIBC has noted that Indian manufacturing SMEs - with their advantages of domestic production costs - are eager to internationalise by accessing cutting-edge technology and good practice through international partnerships.

Technological innovations – for example in water treatment membrane technology, and arsenic removal – are in high demand. This area links strongly to the Innovas survey and the capabilities of Scottish companies, and as above a focus on industrial clients is recommended initially. Another area with good opportunity is in institutional support to water and wastewater stakeholders in India – focused at Scotland's consultancy expertise particularly.

Sustainable rural development is one of India's biggest challenges in the coming decades, and the UKTI highlights the Shyama Prasad Mukherji Rurban Mission as a specific opportunity for UK companies. This is a new Indian Government programme with the aim to provide urban infrastructure and facilities in rural areas, particularly on the fringes of cities. The opportunities that exist in this area are still developing and need to be tracked, but the most prominent requirements will be low cost water treatment technologies, arsenic and fluoride removal, modular treatment plants, solar power driven water treatment, restoration of water bodies, and ground water remediation. These are all areas where a range of Scottish companies bring strong skills and experience, linking back to the Innovas Survey, 2014.

Useful Information Resources for the Indian Export Market Opportunities include:

Companies operating in India - http://www.environmental-expert.com/water-wastewater/companies/location-india

Guardian article: http://www.theguardian.com/sustainable-business/treating-india-wastewater-inaction-technology-public-health

World Bank: http://web.worldbank.org/WBSITE/EXTERNAL/OPPORTUNITIES/EXTCORPPROCUREMENT/0,,contentMDK:22463257~menuPK:64147160~pagePK:64151941~piPK:64152038~theSitePK:438017,00.html

Asian Development Bank: http://www.adb.org/site/business-opportunities/main

http://www.adb.org/countries/india/main

Ground Water Governance: http://www.groundwatergovernance.org/resources/case-studies/india/en/India Government Tenders: http://tenders.gov.in/

EBTC Water Partnership http://www.ebtc.eu/pdf/130502_BRO_EWP-Brochure.pdf

6.3 Poland

Introduction

Water is an important sector in Poland, but one which has historically suffered continuous underinvestment over the years. Significant funding is now being put in place through national and European funding streams to invest in the infrastructure, and Poland offers a number of opportunities for Scottish businesses, particularly in the area of wastewater treatment.

Poland is the largest economy in Central Europe and the largest of the newer member states, and it continues to grow. It is both a significant market in its own right and also acts as an effective gateway to other markets in Central and Eastern Europe.

Almost two thirds of the 39 million population live in cities where the water infrastructure is under severe pressure; and only 55% of the rural population – 8 million of the population – have access to effective water supply systems, with a particular issue in the smaller rural communities.

Figure 12: Map of Poland and Main Cities and Towns; (Source: Upper Quartile)

Overview of the Polish Water and Wastewater Market

When Poland signed the EU Accession Treaty, it agreed to implement the European Urban Wastewater Treatment Directive by 2015, and created the necessary domestic legal acts to meet the requirements of the Directive; foremost among these was the National Urban Wastewater Treatment Program. The co-ordination of this work is overseen by the National Water Management Authority (http://www.kzgw.gov.pl/en/), supported by 7 Regional Water Management Boards.

Both the anticipated timescales and budgets to achieve the required Directive standards have not been fully achieved, but the Polish Government and the National Water Management Authority still intend that by the end of 2015, nearly 100% of the urban population and 60% of the rural population

will be covered by an effective water and wastewater network – with £4.8billion to be spent on the sewers themselves, and £2.3 billion to be spent on sewage treatment plants.

As described in the initial market overview of Poland, significant infrastructure work in water and wastewater is both on-going and forecast. Around 100,000 km of wastewater pipe networking is targeted to be constructed by 2015, in addition to more than 11,000 of small sewage treatment systems. Additionally about 360 sewage treatment plants require either to be refurbished or constructed.

It is estimated that Poland needs to spend up to 20 billion Euros on investment to bring its water and wastewater infrastructure and systems management into line with EU accepted environmental standards, and this area offers a growing number of opportunities for Scottish companies.

The National Fund for Environment Protection and Water Management, (www.nfosigw.gov.pl) – the core institution providing financial aid for environment and water management projects in Poland – has allocated significant funding to a range of water and wastewater related projects across Poland. It will lever further funding from the 73 billion Euros awarded to Poland through the EU structural and cohesion funding from 2014 to 2020, and the programme priorities remain water management and wastewater treatment, flood control and projects helping enterprises adapt to environmental protection requirements.

The Polish Local Self Government Act of 1990 transferred responsibility for water and wastewater services and facilities to the municipalities (gminas) within each county (voivodship) of Poland. There are three tiers of local government in Poland – 16 voivodships (counties) divided into 380 poviats (districts) which then divide into 2,489 gminas (municipalities), so the market continues to be fragmented despite the national regulation and directives. There are a range of distinct opportunities in each county and municipality, particularly as many of the larger municipalities have established autonomous but wholly owned Municipal Water Companies which tend to operate more commercially, and are more open to new technologies and innovation from overseas companies.

Around 100 municipalities in Poland urgently have to build or modernise their water and wastewater infrastructure systems and pipes. Over the next 5-10 years, it is assumed the municipality service offices and/or water companies will still be the main channel for water and wastewater investment in their area, as there remains little privatisation across the sector to date. Less than 1% of the water utilities are privately owned, although the Polish Treasury has prepared a list of approximately 100 municipal entities for future privatisation.

There is also a growing potential market, although of less scale than the municipal wastewater infrastructure work underway, for companies in the redevelopment of post-industrial sites which are spread across Poland's industrial regions, and also in terms of smart systems for agriculture land and the use of water in rural areas with frequent occurrences of drought in Central Poland, badly affecting crops and farmland.

Export Issues and Challenges

The primary and immediate opportunities in the Polish water and wastewater market, matching against the Scottish company base and capabilities highlighted in the Innovas Report, are shown to be in the wastewater technology and equipment market sector, and there is specific demand for:

- Water management and efficiency equipment
- Wastewater management systems and equipment
- Water pumps and piping rehabilitation
- Instrumentation, process control and software
- Modernisation of water intake, treatment and control systems
- Sludge treatment equipment and disposal methods
- Treatment methods for spill control and containment
- Treatment of surface and underground water
- Contractors and consultant engineers

From the research a number of distinct market opportunities have emerged:

1) First and foremost is the development and improvement of wastewater treatment and management systems in the smaller rural areas of Poland which are significant in number and growing – particularly around the fringes of the major Polish cities. These settlements are not covered by the European Directive and subsequent Polish legislation which is only targeted at population settlements of greater than 2,000 – but municipalities will increasingly have to develop local and innovative solutions to the provision of adequate wastewater treatment plants and equipment for these growing communities.

2) In terms of geography, 5 of the 16 voivodships account for almost 60% of the industrial and municipal wastewater requiring treatment, and in particular Slaskie and Mazowieckie have and continue to invest significant funding sums in addressing the issues of management, measurement and monitoring of wastewater, and industrial wastewater discharge in particular.

3) Many of the water piping systems across Poland are 50 to 100 years old, and require immediate exchange or rehabilitation if Poland is to make the improvements it needs to the quality of its water which is a key priority for the Government and industry, and with clear evidence that the quality of water in Poland deteriorates with the length and condition of the water piping system. Demand for innovative piping solutions and repair and

maintenance will remain high, as will the market for pumps for the water and wastewater industry with demand expected to grow at 5-10% annually up to 2020.

4) Demand for effective sludge treatment equipment and disposal remains high, in particular the de-watering process needed in the process of waste-to-energy, with less than 5% of sewage sludge thermally treated in Poland, and only two incinerators with the capacity to convert sludge to energy. Most large and medium sized wastewater treatment plants utilise anaerobic digestion methods, although the use of mechanical sludge dewatering processes are on the rise, and this will be an area of significant demand over the coming years.

5) More generally there remains an increasing market demand in Poland for a broad range of specialist equipment and smart management technology, such as filtration processes and sewage screens, portable automatic flow meters, and equipment for the automatic collection and analysis of wastewater and sewage samples.

6) The Agro-Food Industry Programme, introduced at the same time as the National Urban Wastewater Treatment Programme, also presents market opportunities around the biological and chemical treatment of sewerage and management of sludge from Wastewater Treatment Plants, as well as pollution prevention, focusing on the requirements of the agro-food industry.

Despite the relative inefficiency in many municipalities of the water and wastewater infrastructure and systems currently in place, it is changing and improving, and there are a range of international firms active in the market– particularly from Germany and Holland, and to an extent the USA – which make it a highly competitive market across a number of sectors.

For example, soil remediation companies active in Poland include EOS Remediation, Holland Environment Group PV, and the Biosolve Company, and they have all been active in Poland for a number of years; and there are similar international companies active across membrane solutions and smart systems.

There is also a growing and recognised expertise, and centres of excellence and experience in many of the Polish research and educational institutes working in the water and wastewater field, including the AGH University of Science and Technology in Warsaw, (http://www.agh.edu.pl/en/), and The Faculty of Environmental Engineering in Warsaw University of Technology, (http://www.pw.edu.pl/engpw/Faculties/Faculty-of-Environmental-Engineering) amongst others.

These Institutes have a strong history of collaboration and joint projects, both European and wider, with centres of excellence in research and application in other countries, most notably Germany and Holland; but there is no reason why some of the Scottish research Institutes could not pursue and take advantage of the number of academic collaborations and joint research projects on offer – many supported by European funding.

Route to Market

Poland is a relatively advanced market to do business with once an understanding of the market is achieved. It is the main hub market in Central and Eastern Europe and as such has good transport links with the surrounding countries and a growing service sector and infrastructure to help develop trade.

However it remains a fairly challenging market to enter for the first time, and most overseas companies work in Poland on a joint venture basis, or through a local business partner.

Language can often be a barrier – although the younger population are increasing their use and fluency of English, but amongst the older generation (45+ and educated under the old Communist regime) there is usually limited understanding of English; and many of the central and municipal Government tenders will be issued in Polish, requiring translation and a good understanding of the language.

It is also a highly competitive market with close ties to Germany, and many German companies have been active in the water and wastewater market for many years. Given the close links to Germany in particular, a number of companies will use Germany as the base to enter the Polish market from, and then use Poland as a base to expand further into central and Eastern Europe.

Polish legislation can be complex, and there remains a considerable amount of certification required around individual water and wastewater projects, so while much of the documentation and certification adheres to European standards, there are a number of elements within the certification specific to Poland which companies entering the market need to be aware of.

There are a range of bodies and organisations in Poland to assist companies successfully enter and develop the market, and most prominent among these is:

- The British Polish Chamber of Commerce (BPCC)
  British Polish Business Centre
  Marszalkowska 89
  Warsaw
  http://www.bpcc.org.pl

The Chamber has a very active membership, and a number of policy and support staff – the primary contact for water and wastewater is Monika Samus, Manager of the British Polish Business Centre in Warsaw.

Scottish companies should also be aware of the newly launched **BPCC Trade website and Trade system** http://trade.bpcc.org.pl, where Scottish companies are able to register on the system and then access BPCC support and trade tools in searching for partners and opportunities in the Polish market.

SDI is represented in the region through the Dusseldorf Office in neighbouring Germany and serves the Polish market from there. UKTI are active in the water and wastewater sector generally, and work through the BPCC in Poland as part of an outsourced service for the market.

UKTI also have close links with British Water, which although dominated by larger companies, still provides a range of international support services for members and is looking at a future workshop for companies to develop the Poland market.

Other useful contacts and associations serving the sector, and a source of potential business partners as is the BPCC, include:

- Chamber of Commerce - Polish Waterworks
  Ul. Jana Kasprowicza 2
  85-073 Bydgoszcz
  http://www.igwp.org.pl
  sekretariart@igwp.org.pl

- Polish Union of Sanitary Engineers and Technicians (PZITS)
  Ul. Czackiego 3/5 14
  00-043 Warsaw
  biuro@pzits.pl
  Email: biuro@pzits.org.pl
  http://www.pzits.org.pl

- Polish Association of Water Plant Construction Engineers and Technicians (SITWM)
  Ul. Czackiego 3/5 14
  00-043 Warszawa
  Email: sitwm@sitwm.pl
  http://www.sitwm.pl

Scottish companies, such as Scottish Water International and Scotmas have had some success in the Polish market although, as referred to above, the main difficulties have been the language barriers and finding the right partner in terms of delivery.

Industry events and conferences remain important for the sector, both in terms of creating visibility in the Polish market, and the opportunity to better understand how the market works and to identify appropriate potential partners.

The most important exhibition for the water and wastewater sector is Wod-Kan – the International Fair of Machines and Devices for Water Supply and Sewage Systems - which will be held in Bydgoszcz on 26 -28 May 2015, (http://igwp.org.pl/english). Further details of this event are provided in Appendix 3.

Other more targeted events over each year for the water and wastewater sector include:

- International Trade Fair for Municipal Technologies at Poznan, 27-30 October 2015
  http://poleko.mtp.pl/en/

- Aquatherm Trade Show in Warsaw 16-18 September 2015
  http://www.aquatherm-warsaw.com/main/

- There is also the bi-annual International Water and Sewage Industry Fair - Wodociagi Fair in Poznan due to be held next in April 2016 which is seen as one of the key events for the industry.

Companies should also consider a number of the Shows held in Germany which are targeted at central Europe and Poland and Hungary in particular such as:

- **Terratech, Sustainable Solutions for the Environment –** due to be held 27-29 January 2015 and focusing on all aspects of environmental technologies and services, particularly for the water industry - http://www.terratec-leipzig.com/

Priority Market Opportunities in Poland

The market in Poland is one which offers good opportunities for Scottish companies over the medium to long term, but requires time and financial commitment from the company to make it work.

There is a good overall match between the priority needs of the Polish market and the capabilities of the Scottish company base. Early research into the individual municipality requirements and projects together with the effective identification and sourcing of potential business partners will be the key first step for many Scottish companies, and ensuring the local partner identified is well connected into the industry and water/wastewater bodies and the tendering process, where much of the work still comes through at municipal level.

Many of the public tenders are in Polish and require a local presence on the ground in Poland, but once this is in place, business is relatively straightforward although language translation remains an issue particularly for the older generation.

Companies with experience in the German market should also consider using Germany as an initial base to enter Poland and other Central European markets in the first instance. However if the business wants to develop good and sustained export business in the Polish market it needs to work through a local partner; establish a local representative office, or if there are major opportunities in the market consider a joint venture approach with suitable partners.

The industry exhibitions are generally well regarded and well attended, and provide a good initial exposure to what is fast becoming a very competitive market with competitor countries' already with well-established operations in Poland across some of the key sectors such as wastewater, sludge treatment, and membrane technology. Alongside Germany, Italian and French companies are very active in Poland, and have built strong relationships across the industry.

The support available for companies in the market is good with UKTI having a focus on the water and wastewater sector more generally, and the British Polish Chamber of Commerce has started to gain a very strong track record as the outsourced provider of export support for UK and Scottish companies. Building the linkages and knowledge across the identified municipalities will be key, and the BPCC has a range of contacts at municipality level which can be tapped into.

Given the opportunities which exist in the market as set out, and the relatively easy process of doing business in the market, providing you have access to the necessary language skills and a good partner, it is surprising not more Scottish companies are considering the Polish market as a primary area of opportunity, and also as an effective gateway into the other markets of Central and Eastern Europe.

In part this may well be down to perceptions of Poland that are somewhat dated, and it is seen as part of the old Europe, but there are also some genuine barriers to market such as the fragmented nature of the water and wastewater sectors across the municipalities in Poland, and the cost and time it can take to establish yourself in the market as Poland is naturally a more conservative market than other Western European markets.

However the market opportunities for Scottish water and wastewater companies are certainly there, specifically with reference to:

- Wastewater treatment systems and equipment for smaller rural areas and municipalities
- Effective Sludge treatment provision of equipment and disposal
- Services and expertise which combining efficient dewatering solutions and energy production capabilities
- Water pumps and piping technology and product
- Delivery of new technologies in water and wastewater smart management and monitoring

Moving forward, it is hoped that more Scottish companies will take advantage of the opportunities in Poland, and a potential trade mission to the region around the Wod Kan Fair in May 2015 is being supported by UKTI and BPCC which may provide a useful first step and opportunity to view the market at first had for some of the Scottish companies.

6.4 Singapore, Malaysia and Thailand

Singapore

Introduction

Singapore is a country with major plans for further development of its water resources which will present a number of potential opportunities for Scottish companies. For example, the Government target for 2060 is to acquire 50% of water resource from reclaimed water, 30% from seawater desalination and 20% from rainfall collected in water catchment areas, to be self-sufficient.

Figure 13: South East Asia Map (Source: Upper Quartile)

Singapore is also one of the few countries with which the UK runs a trade surplus in goods and UK is the third largest source of foreign direct investment (FDI) into Singapore, investing over £24 billion in 2012. There are good connections in the market and contacts through a number of sources including the local SDI/UKTI offices.

As noted in the initial review of the market, the water and wastewater sector in particular, presents a number of potential opportunities for Scottish companies with a capability in:

- Equipment manufacture;
- Filtering and purifying machinery and apparatus;
- Wastewater recycling and treatment technologies;
- Modular wastewater treatment systems;
- Solar technology providers;
- Green building consultancy firms;
- Pollution control and resource recovery.

Overview of the Singapore Water and Wastewater Market

The Singapore government identified water as a key sector for growth in 2006 and has also invested heavily in R&D in the environmental sectors which could be a further development area for Scottish companies and research institutes. The status as a "Global Hydrohub" has been pursued through the development of a strong cluster ecosystem of local and international companies linking with complementary sectors including research and higher education. This evokes links with Scotland's Hydro Nation approach.

The Singapore Global Hydrohub has about 130 water companies and 28 public and private R&D centres conducting research in various areas of water technology. These organisations cover the value chain of the water industry, spanning from upstream component players (e.g. membrane and pumps manufacturers), original equipment manufacturers (OEMs) and system integrators, to downstream Engineering, Procurement & Construction (EPC) players and project developers.

Specific opportunities for Scottish companies include: those who have expertise in membrane technologies and other relatively new technology in the water sector; rainwater harvesting and treatment of grey water reuse; companies which could contribute to new technologies, directly or indirectly in collaborations or partnerships with other companies, state sponsored agencies and universities.

Singapore aims to be attractive as a place where companies can easily establish partnerships in R&D, development and test-bedding of integrated solutions and collective bidding for global projects. In this way a presence in Singapore water industry can also open up onward export of water expertise to key overseas markets such as China and the Middle East through links with Singapore based water companies.

In water treatment technologies, treatments developed in Singapore by consortia/association with leading global players such as Black & Veatch and CDM from the USA are now being applied in other markets. This can give leverage to scale up, access contracts and replicate services globally. Much of this and emerging developments are profiled at the Singapore International Water Week where different players in the value chain of innovation and commercialisation attend as well as industry and sector representatives from around the world.

Beyond water, Singapore is also nurturing opportunities in the wider environmental industry which includes environmental consultancy, waste management and pollution control. Companies like Keppel Seghers, Veolia, Dowa and Golder Associates have established their presence in Singapore.

This idea of Singapore as a springboard for environmental and water companies' looking to serve the region has attracted companies from across the world including: GE Water, Black & Veatch, CDM Smith and Xylem from North America; PWN Technologies, Arcadis, DHI and Veolia from Europe; Memstar, Nitto Denko, Toray Industries and Dowa from Asia.

Links with these companies could be considered along with local companies including: Hyflux (a global water solutions provider which has built two desalination plants in Singapore and one of the world's largest seawater reverse osmosis desalination plants in Algeria); Sembcorp Industries (a world water utility company and the largest waste management company in Southeast Asia); Keppel

Seghers (the environmental engineering and technology arm of Keppel Corporation) and Boustead Salcon (an international water and wastewater engineering specialist).

Singapore has particular interest and some expertise in the fields of membrane technology, water reuse and desalination. In recent years, there has been a growth in environmental services and companies in the engineering services, wastewater and waste treatment which dominate the environmental technology industry. There is still scope for companies to establish a niche in the wider regional market, such as in the construction of wastewater treatment plant. The Environment and Water Industry Programme Office (EWI) leads the growth of the environment and water industry in Singapore. This recognises the environmental technology sector having continued strong growth in Asia generally with efforts in Asia-Pacific countries to balance economic development with environmental protection.

There is potential for Scottish companies to use Singapore as a base from which to market and provide their services, including environmental engineering services of relevance to the water/wastewater sector, to the city state and the wider region, and to exchange skills and expertise.

Companies with water related products, services and know-how could be able to find suitable niches in which they could participate. Collaboration in joint projects in other markets through Singapore is also possible for turnkey projects or as sub-contractors in specialized areas of some projects. There is considerable potential and a range of possibilities within Singapore's water sector. This includes selling products, equipment, services and know-how to Singaporean companies and collaboration with Singaporean companies in taking on projects in Asia or other parts of the world. R&D cooperation and projects could be further options for specific Scottish companies, research and sector organisations.

Singapore's strategy is to diversify the water sources, optimize the water supply and focus on new technologies to develop alternative water sources. Government encouragement, investment and support is available to companies to develop new methods and technologies within the water sector, especially if it promotes a more robust and reliable water supply.

As water is a scarce and precious resource in Singapore, industries look to use industrial water as much as possible for their supporting activities such as cooling towers and component washing. Scottish water companies which are involved in the manufacture, application and servicing of high value-added treatment facilities, such as membranes, and water treatment, could generate potential interest and demand.

Export Issues and Challenges

There are a number of issues and challenges for Scottish companies looking at the Singapore market. These include:

- The need to identify a specific target niche in the market and pursue this with a high quality product offering, confident package of reliability and innovation and commitment to the market;
- Finding the right high level contacts to make initial approaches and potential collaborations;

- Access to the tender opportunities available through the main procurement routes, notably PUB, where on-going links are being built as below;
- Developing a presence and profile in the market to build on the potential and the recent contact between SDI and Singapore, notably PUB, and the identification of common interests and a commitment to work with each other in developing the market opportunities;
- Accessing local skills and representatives to broker relationships and develop profile;
- Demonstrating a commitment to the market long term and the ability to transfer knowledge and opportunities into the country for indigenous collaboration.

This all requires time and other significant resource commitments to access the routes into the market.

Route to Market

The Public Utilities Board (PUB) is a main point of contact at a strategic and operational level for all interested parties (including recent senior level meetings with the CEO of SE and SDI; and on-going dialogue between the agencies). PUB has the main task of developing Singapore's water resources and this quasi-government organisation facilitates Singapore's development as a hub for water technologies. It is a prestige award winning organisation recognised for their transformation of the city from an urban nation to a model of smart and sustainable water management practices.

The differentiation for Scottish companies could rest on the specific expertise and offering backed by the reputation as a nation with substantial natural resources, leading models of development and environmental awareness, quality education and a research base with a range of transferable technological expertise within the private sector. Singaporean agencies and companies are familiar with the possibilities from Scotland but further promotion will be required in specific industry propositions and a focus on areas of precise complementarity/market advantage.

Direct approaches through the various organisations promoting development of the sector is one route to entry. Some organisations such as PUB publish tender opportunities and can provide helpful introductions and contacts. Intermediaries such as EWI and partners can also provide linkage to local players as well as participation in events such as SIWW. The growth of Singapore as a regional hub for the industry and research also makes it attractive as a base for the region, especially given the historic ties and current levels of trade and investment from the UK.

Entry can either be direct, through a representative, or by setting up a base in Singapore (commonly through a joint venture partnership). Singaporean companies are often much more comfortable dealing with a local representative than direct.

Scottish companies can use Singapore as a base from which to market and provide their products and services to the region and the government is also receptive to companies with expertise to add to the cluster. This will require development of relationships and a long-term view on the potential for growth. For more short term opportunities and contracts, links with companies with a connection in Singapore could be a good starting point. The lists of the top companies and the tender database are useful references (see Annex listing). Many of these companies have a UK presence and approaches through this route could determine the precise next steps.

The water/wastewater sector has been identified by Singapore as a strategic growth area to help the country diversify its economy.

Singapore, a highly urbanised city devoid of natural resources is keen to create a self-sustaining, self-renewing model for environmental care. Recent reports point to current interests in the purchase or co investment in innovations and new technologies. This is present in all the leading Asian countries as well as opportunities in contract collaboration work. Joint ventures and technology transfer interest is strong especially in areas of membrane technologies, intelligent sewage plans, water desalination and key technologies around water treatment and disinfection.

The development model set by Singapore has set the standard for other markets in Asia in terms of water efficiency and reuse water from sewage as industry or drinking water, collecting rain water, desalination plants and recycling all kinds of water by application of leading new technologies.

Priority Market Opportunities in Singapore

The priority market opportunities cover:

- Joint ventures and technology transfer in areas of membrane technologies, intelligent sewage plans, water desalination and key technologies around water treatment and disinfection.
- Water efficiency and reuse water for industry or drinking water, collecting rain water, desalination plants and recycling all kinds of water by application of leading new technologies – water testing and monitoring, wastewater equipment and treatment,
- Support services including water metering, data management and industry efficiency intelligence systems - companies in Smart Management, data systems analysis and consulting.
- Contract opportunities for contractors and designers in collaboration with local partners and major players established in the market – companies in infrastructure services, consulting.
- Joint research opportunities in new technology, systems application and micro systems for urban areas.

Further Information and Links for Singapore market:

- Singapore Water Association: WaterHub 80 Toh Guan Road East, Singapore 608575;
  Tel: (65) 6515 0812, Fax: (65) 6515 0813, Email: enquiry@swa.org.sg

  The Association aspires to play a role in efforts to profile and promote Singapore as a one-stop centre for all water-related services and water technology hub. It is a forum and meeting point for local companies, promoting collaboration and the exchange of ideas and knowledge, networking and the dissemination of strategic information on emerging business opportunities and new technologies. A business matching function helps a business to grow through access to the latest project tenders and activities in the market plus reports and industry newsletters.

- Singapore Business Review: Singapore's largest engineering firms 2013

  This list contains a number of companies well known to the Scottish company base, such as Arup and Mott MacDonald, providing an initial link and potential route to market for some water and wastewater companies, as well as the opportunity to gather knowledge and learning, and potential collaboration opportunities, from the experience of these companies in the market.

  See: http://sbr.com.sg/building-engineering/feature/singapore%E2%80%99s-15-largest-engineering-firms-2013#sthash.OTpc1kCL.dpuf

- The Public Utilities Board (PUB)

  PUB publishes a list of awarded and forthcoming contracts. The list of awarded contracts has details of the contracts, the winning firms and also forthcoming contracts to be tendered by category into next year. For example, Contract 3 September 2014 - Proposed Second Membrane Bioreactor Retrofit (LM 1) at Changi Water Reclamation Plant awarded to Smitech Engineering Pte Ltd; contract value $48,390,000. Some successful companies have subsidiaries in Scotland, such as Torishima pump technologies and water related pumping service solutions which has a base in Glasgow. These listings can be explored at the PUB website and specific contacts followed up to match with potential capabilities of other Scottish companies.

  For more details see PUB Contract Tenders:

  http://www.pub.gov.sg/tenders/awarded/Pages/default.aspx#sthash.hEtXzm9M.dpuf

- PUB Website and Publications: www.pub.gov.sg

  Includes "Managing Stormwater for Our Future", an overview of PUB's stormwater management strategies, approach and requirements/future preparations for Singapore. It also provides information to match with specific opportunities for Scottish companies.

- Environment & Water Industry Programme Office (EWI)

  Set up in 2006, the Government set up the Environment & Water Industry Programme Office (EWI) to spearhead the development of the industry.

  The EWI provides overall direction in the development and growth of the water and environment industry. It is an intra-agency setup and its role is primarily to coordinate and integrate efforts and the various components of these programmes dedicated to the environment and water industry, so that Singapore can be a global hub for the water industry. EWI resides administratively in PUB, Singapore's national water agency but draws on the resources and domain expertise of officers from a number of key environmental and economic government agencies such as the PUB, Economic Development Board (EDB) and International Enterprise Singapore (IES). This "Whole-of-Government" approach integrates

policy and implementation frameworks across the different agencies that are involved in development of the industry. A range of government agencies are involved and prominent national and international company partners.

- The Singapore International Water Week (SIWW)

Organised by EWI, this is a global platform for the industry and all water solutions. Stakeholders from the global water industry gather at SIWW to share business opportunities and showcase the latest water technologies. SIWW is part of the strategic programme of the Singapore Government to grow the water industry and develop water technologies.

SIWW in June 2014 had discussions on four themes: Municipal Water, Industrial Water, Integrated City-Environment-Water, and the Future of Water, exploring forward-looking solutions to meet future challenges and scenarios.

It is held in conjunction with World Cities Summit & Clean Enviro Summit and promoted as a leading event on the global water calendar with a Water Leaders' Summit, Water Convention, Water Expo, Business Forums and Water Prize Awards with opportunities for participants to network, exchange information and make important contacts.

Events include the TechXchange, a one day forum to connect innovators with international partners and investors, accelerating the commercialisation of new and innovative water technologies, round table discussions hosted by industry leaders and the opportunity to secure one to one meetings.

See SIWW event summary and contacts:

http://issuu.com/siwwsg/docs/siww_post-show_highres/8?e=0/9285880

SIWW Water Utilities Leaders Forum Delegate List identifies senior contacts from global organisations including many from Singapore, Malaysia and Thailand:

http://www.siww.com.sg/delegate-list

Singapore Environmental Industry Directory:

http://www.timesdirectories.com/indexSENV.aspx

Malaysia

Introduction

Malaysia is one of South-East Asia's most vibrant economies, with recent decades of industrial growth and political stability. Agreements have been developed including with the EU to encourage development and trade. In the water and wastewater sector, the adoption of Green Technology in the management and usage of water resources, wastewater treatment, solid waste and sanitary landfill water/wastewater management is a key opportunity. However, evidence indicates that many tenders are awarded predominantly to Malaysian companies.

Malaysia is an exporter of water to countries such as Singapore with agreements in place until 2061. However highly urbanised areas are growing fast and facing water shortages as well as problems with cleanliness and waste treatment.

Overview of Malaysian Water and Wastewater Market

The Asia Pacific Economic Cooperation Forum (APEC) membership has recognized that an open global trade and investment system is necessary for sustainable growth. APEC's primary goal is to support sustainable economic growth and prosperity in the Asia Pacific region.

This requires member countries such as Malaysia to significantly invest in solving, limiting or preventing environmental problems, eliminating preventable diseases, protecting natural resources and attracting inward investment, and there has been considerable activity and investment going into the water and wastewater sectors in Malaysia, presenting opportunities for Scottish companies.

A report by the United States Agency for International Development (USAID) in 2010 showed that large and reasonably well-developed water utilities, wastewater treatment and waste management segments had emerged from a cycle of privatisation, nationalisation, and reprivatisation, evolving into competitive regional players. The leading companies in these segments have started to develop business in Southeast Asia and China, and some have taken the initiative to leverage their domestic expertise into more international participation in Africa and the Middle East.

The UK Public Services International Research Unit concluded: "Because of the country's privatisation policies, Malaysia is one country in Asia which has created a number of national water companies active in water supply or distribution. Some have become active outside Malaysia, almost entirely in China; some remain active only on the Malaysian market."

Drivers of the environmental market in Malaysia are principally federal laws and regulations, self-imposed international standards of multinational corporations, and the budgets of federal, state and local government, as well as the demand for and provision of basic environmental infrastructure services. Inconsistent enforcement has been one of the problems inhibiting development of the environmental industry in Malaysia.

Export Issues and Challenges

There appears to be no significant barrier to the import of environmental equipment or to the establishment of local service subsidiaries to sectors including water and wastewater. Some imported environmental equipment attracts taxes and duties according to some reports, depending

on the classification of goods under the Harmonized Standard codes. However MEUFTA (see Links below) has improved the position and given access to foreign technology, equipment and expertise with a generally friendly policy to international business.

The USAID research report from 2010 identified over 2,700 companies in the water and related core environmental goods and services category, including 200 water utilities and 400 wastewater treatment companies. However over 50% of water equipment was imported and over 40% of monitoring equipment/systems.

As Malaysia grows, so does the problem of providing sufficient clean water to the population - and the opportunities for companies from overseas to provide solutions. For example, Malaysia's 28 million people generate about seven million tons of sewage every year, most of which is treated and released into rivers; there are significant opportunities for treatment solutions especially as 98% of Malaysia's fresh water supply comes from surface water.

In the wastewater equipment segment, European, Japanese and American providers have dominated in areas such as speciality treatment. However to encourage local participation, local distributors, suppliers, contractors and locally produced equipment and technologies for wastewater treatment are given preferential advantages by the local government.

Additional Government focus is on the water and wastewater treatment sectors through the adoption of Green Technology in the management and utilisation of water resources, wastewater treatment, solid waste and sanitary landfill.

There are opportunities for overseas water and wastewater companies in all of the above areas, particularly in the provision of systems and sensor and monitoring equipment, and in accessing contract opportunities in some of the major government water infrastructure programmes. For instance, to address water shortages in the Kuala Lumpur region, the government is investing in programmes for the purpose of water resources protection, rainwater harvesting and groundwater development.

Routes to Market

There are specific opportunities for growth which includes: supply of wastewater treatment systems, monitoring equipment, wastewater recycling equipment, sludge dryers and industrial purification systems. Malaysian environmental consulting and engineering firms have evolved rapidly in the past decade, giving rise to a RM 300-400 million (€68-91 million) market with nearly 300 companies involved (USAID, 2010). This could be a link for Scottish companies to access opportunities and enter the market, especially as some of the senior managers and decision makers were educated in Scotland.

Some leading players are international companies such as Veolia Water (France), leaders in wastewater treatment; Kurita Water (Japan), Organo Asia (Japan), leaders in water and wastewater treatment equipment. This offers another potential entry link through developing relationships with tier companies in the supply chain.

Priority Market Opportunities in Malaysia

Cross referencing research by APEC, USAID and the Belgian Foreign Trade Agency (2014) indicate the following sectors in Malaysia offer significant opportunities for growth matched against Scottish company capability:

- Supply of wastewater treatment systems, monitoring equipment, wastewater recycling equipment, sludge dryers and industrial purification systems;

- Supply of municipal sewerage treatment plant and equipment to Indah Water Konsortium (former privatised department of government) and developers that IWK contracts with. Demand by IWK is for new sewerage treatment parts such as pumps, aerators, mixers, filters, screens and water monitoring equipment;

- Waste minimisation technologies, hazardous waste recycling and disposal (toxic metal and low radioactive sludge, medical waste) and bioremediation technologies;

Additional Information for Malaysia - Sources and Links

- MEUFTA: 13 Working Groups have been established since 2010 for this Free Trade Agreement e.g. to facilitate trade between the Parties; ensuring effective customs controls and adherence to international rules; prevent and eliminate barriers to trade by improving transparency and bringing certainty and consistency; enhance transparency and best practices in public procurement; IPR; competition policy. See: www.miti.gov.my

- Tenth Malaysian Plan - sets out the 5 year strategic plan for the country and key policy areas and sectors. See: https://www.pmo.gov.my/dokumenattached/RMK/RMK10_Eds.pdf
  Within this 5 year plan for economic growth, Malaysia is re-assessing the management of its resources across the entire water cycle – from where water is drawn, to how water is treated and supplied to citizens, and how wastewater is returned to the environment. During the Plan period, Malaysia's strategy for ensuring a sustainable water supply will focus on 3 areas:

  - Developing a long term strategy for water resource management to achieve water security;
  - Continuing efforts to restructure the water services industry; and
  - Protecting rivers from pollution

  Each of the above areas may offer opportunities to expertise areas across the Scottish company base as Malaysia seeks to aspire to higher standards in its water and wastewater industry.

- Events: Asia Water 2014/2016
  Asia Water is held in Kuala Lumpur Convention Centre, Malaysia, and attracted almost 13,000 visitors and around 750 companies in 2014. The biennial event is the major show for the sector in Asia, and the next event takes place in April 2016. Refer to http://www.asiawater.org. Details for the 2014 Asia Water also provide a full buyers' guide of the different companies active in the Asia water and wastewater markets.

Asia Water is now a series of exhibitions that has expanded to include Thailand- http://www.thai-water.com/en-us/home.aspx (Thai Water 3-6 June 2015, Bangkok); and other neighbouring countries such as Myanmar, Vietnam, and the Philippines.

Thailand

Introduction

Thailand is a growing country with a large populace, spending over $2 billion USD/year on environmental technology with the government accounting for some 40% of this and the private sector 60%, with growth of between 5 and 10%. Growth is generated by the rising population, increased urbanisation, and new industrial expansion.

Thailand has no barriers against entry of water and wastewater equipment. However reports indicate that pollution control equipment used in wastewater treatment is subjected to 0-5% import duties.

Overview of Thailand Water and Wastewater Market

Expansion of the environmental industry relies on the technology and expertise of foreign products and services. Locally made products meet general standards for environmental needs, but many specialised products continue to rely on imports. It was estimated in 2009 that as much as 70 to 80 per cent of environmental equipment is imported each year to Thailand.

The need to solve environmental problems is a key priority for the Thai Government and the government has pursued privatisation aggressively. World Bank and Asian Development Bank (ADB) projects drive opportunities with an emphasis on build, own, operate (BOO) and build, operate, transfer (BOT) projects. Forecasts indicate further long-term commercial opportunities for the environmental sector, including water and wastewater, and the high priority needs identified from Government reports include:

Water/wastewater:

- Privatisation projects, which will create opportunities in engineering, management consultants, contractors, and operators with build, own, operate (BOO) and build, operate, transfer (BOT) concessions;
- Pumps (submersible, centrifugal, aerator/mixer, dosing and vacuum), sludge dewatering equipment (filter presses, belt press, and small dewatering systems) and screening machines (bar screens, shredding screens);
- Groundwater, water resources management;
- Municipal and industrial wastewater treatment plant management and operations;
- Consultants and contractors, operators, equipment manufacturers and financiers in supply, and operational training.

Authorities such as the Bangkok Metropolitan Administration (BMA) have supported private sector participation in the management and operation of municipal waste and wastewater treatment plants, new wastewater treatment projects investment, and operation and maintenance. In addition to such developments, the provision of water and environmental consulting services, and pollution control equipment is an ongoing opportunity.

Export Issues and Challenges

As noted earlier there are some direct taxation barriers that apply to business imports however, the major barriers relate to indirect and less tangible hurdles. Many contract tenders go through an defined procurement routes but this varies across the country and local networks are important in accessing opportunities. The transparency of some contract decisions has been questioned in the past and finding partners can also be a challenge. The market values long term commitment and contribution of value into the country as well as the basic provision of goods and services. Positioning and pitching the right offer on attractive terms is always important.

Austrade reports that access to opportunities has been favouring local Thai companies in the past for contracts from organisations such as the Public Works Department (PWD) and local administrations and municipalities. They note that other public agencies such as BMA, the Ministry of Natural Resources and Environment (MONRE), and the Industrial Estates Authority of Thailand (IEAT) are becoming increasingly reliant on international contractors and consultants that are amenable to forming partnerships with Thai companies, while bringing competitive skills and expertise to clients.

Route to Market

There are opportunities through local partner organisations and through networking with key agencies. The Ministry of Natural Resources and Environment (MONRE), which includes the Office of Environmental Policy and Planning (OEPP), the Wastewater Management Authority (WMA) and the Pollution Control Department (PCD), is the key agency for environmental projects, providing finance, regulations, research and direction. Agencies, such as the Bangkok Metropolitan Administration (BMA), implement and manage projects.

Metropolitan Waterworks Authority (MWA) and the Provincial Waterworks Authority (PWA) have invited the private sector to participate in several build, own, operate (BOO) and build, operate, transfer (BOT) projects, to cope with the rapidly growing demands for water supply.

In the past, most international suppliers of equipment and machinery have entered the Thai market by appointing local agents/distributors or opening local offices. Reports from several sources in the country and trade organisations of other countries indicate that local companies are eager to work with international partners, especially as they often have to seek international expertise when working on large-scale projects. As in all countries, Scottish companies will work most effectively in Thailand by developing long-term relationships and creating the sense of trust needed to do business in the region.

Major environmental projects are under the responsibility of various Thai Government agencies.

Establishing networks of contacts with local companies and government ministries is essential in gaining access to information about market opportunities. Trade associations (e.g. Environmental Engineering Association of Thailand and Thai Chamber of Commerce), government-sponsored funding programmes, and environmental exhibitions or shows are powerful tools for gaining access to opportunities, contacts and knowledge about the local market.

Priority Market Opportunities in Thailand

The main areas of opportunity in the Water/wastewater sector are solid waste management and pollution control covering:

- Smart Management Instrumentation and Sensors;
- Wastewater treatment equipment;
- Pollution control equipment manufacturers/designers;
- Water conservation technologies;
- Consulting and applied research services and contractors; and
- Infrastructure and services for flood prevention.

Experience by others show that there are specific opportunities for water and wastewater related companies offering environmental technologies and products that are:

- Relatively easy to install or construct
- Have minimal need for after-sales servicing or technical or professional support in operations
- Low levels of ongoing maintenance

Niche market and sub market opportunities related to water and wastewater treatment are expanding. New policies and regulations are being introduced to increase the participation of the private sector, and many publicly controlled services are being outsourced to private (domestic and foreign) companies. Many environmental laws and standards need strengthening, suggesting new opportunities for Scottish companies also in this market space in the future.

Additional Information for Thailand: Sources and Links

Given the current situation in Thailand, some links have yet to be renewed by the Government and there is restricted access due to reorganisation. Limited coverage can be obtained from the main government site: http://www.thaigov.go.th/index.php

and information site: http://thailand.prd.go.th/index.php

The other main sites of interest for Scottish company opportunities include:

- Bangkok Metropolitan Authority: http://www.bangkok.go.th/th/main/

- Metropolitan Waterworks Authority:

  http://www.mwa.co.th/ewtadmin/ewt/mwa_internet_eng/main.php?filename=index

- Department of Industrial Works, Ministry of Industry: www.diw.go.th
- The Industrial Estates Authority of Thailand: www.ieat.go.th
- Thai Water 3-6 June 2015, Bangkok, http://www.thai-water.com/en-us/home.aspx

  As previously mentioned, Thai Water is part of a series of water and wastewater technology events that focus exclusively on the ASEAN region. The show has grown to become one of the leading water exhibitions in the region and a place to establish new business contacts and profitable water related networking opportunities.
- Ministry of Commerce: www.moc.go.th
- Royal Thai Customs Department: www.customs.go.th

Concluding Comments on South East Asia

All three countries offer opportunities of varying scale and potential for Scottish companies. Thailand has the largest population and scale of potential but Singapore, a city state with a population smaller than Scotland, offers a more immediate potential conversion for high value opportunities and shorter returns as well as clearer routes to market and contract opportunities.

The maturity of the market systems, business focus and network relationships in the South East Asian economy generally (as well as the water and wastewater sectors) make this an attractive location for specific companies with capabilities to do well in the market, for example:

- Companies specialising in water quality and treatment technology and systems
- Companies offering effective wastewater treatment solutions
- Companies offering effluent treatment capabilities

For Singapore in particular, the recent discussion between SE/SDI and PUB should also provide a good basis for taking the next steps with companies in this market and developing a long term strategic relationship with the market. This could then become a springboard for further market development in Asia, as well as individual company relationships within the water and wastewater cluster.

7.0 The Scottish Water and Wastewater International Proposition

An important element of the research was to review how the Scottish water and wastewater sector is perceived in international markets, and how the image and proposition of the Scottish industry sector for international markets could be developed to assist the companies maximise the export potential open to them.

In general there is actually very limited perception of Scotland at all in international markets in terms of the water and wastewater sectors, particularly in the markets which were considered under this research project. The countries which are seen by industry to be leading the market tend to be Holland, Germany and to some extent the Nordic countries, and particularly Holland in terms of water innovation and technology.

The elements and promotion of Hydro Nation which seek to promote Scottish expertise and experience in the sector – with a focus on the importance of the water economy to Scotland, and how strengths have been developed across water technology, governance, water and wastewater management and regulations – is still in the early stages, although over time will help to build the overall Scottish proposition in the market.

The current focus particularly on governance and regulation, whilst a good narrative and track record for state and public sector utility bodies to promote and sell in the expertise and knowledge of Scottish Water, does little for the private sector companies and research institutes involved in the sector.

There would appear to be a clear need to develop the Hydro Nation offer more widely, but the challenge is the size, scale and segmentation of the water and wastewater market worldwide. The reality is that most companies are succeeding currently in the international markets through their own unique technologies, quality of product and building individual relationships in their key target markets.

A more Team Scotland approach would deliver additional benefit for Scottish companies, if it was aligned closely with the sector strengths, and communicated and built on the key strengths that Scotland is well regarded for and known for in international markets currently, alongside developing the more medium and longer term proposition of Hydro Nation.

The water and wastewater sector in Scotland is largely non-competitive and complementary, although there are some areas of overlap, but in general a collaborative approach to the promotion of the sector should work well, demonstrating the broad range of strengths and expertise across the sector, and allowing a sharing of export market knowledge and experience.

While the research showed limited awareness and profile of the Scottish water and wastewater offering in international markets out with individual companies, there was good awareness of some of the more traditional strengths and reputation of Scotland in the fields of:

- Scottish engineering, and science and technology
- Academic teaching and research
- Oil and gas industry experience.

A combination of both the emerging and wider positive messages and profile from the companies in the sector, together with an emphasis on the key relevant features where Scotland is already distinguished and well respected for, should form the core proposition, building also on the work done by Hydro Nation in telling the water story of Scotland.

Whether the proposition should sit around Hydro Nation will depend if both Hydro Nation and Scottish Water embrace more fully the expertise and innovation that is out in the Scottish company and academic research base – if not then companies and the institutions will continue to develop the export markets under their own reputation and banner, and the wider approach to promote Scotland will be lost.

The emerging bank of case studies of successful companies should continue to be developed, and underpin the proposition – reflecting also the scale of the different markets under the water and wastewater umbrella.

This is a critical point as when we spoke to the majority of the companies, their current export market work is in markets where they have been approached for the technology or product they offer; or they have entered the market not because of the wider geographic market potential but normally because of a specific sector or market opportunity, and then the market has developed from there.

Thus the proposition needs to both support a geographical market approach, and a market sector approach, if it is to be effective and aligned to how the market works. Similarly there will need to be a consistent promotion and development of the proposition – Scotland is comparatively a late starter in developing the international opportunities for water and wastewater. It is competing against a number of countries and large companies who have been operating in the potential target markets for Scottish companies for a number of years, and needs to show it is serious about the market, and there to stay with a unique and quality offer to the market and proposition.

The development of a strong international proposition for the sector does not mean that it has always to be used – in some instances it will not be appropriate – but it should be available and encouraged to be used; deployed and used consistently, and add value to the company's individual efforts and approach to the market.

A particular target market for the Scottish proposition would be the key organisations such as the EU, UN, OECD, and the main aid organisations such as DFID, who are all extremely influential in their commentary on the sector; funding streams being delivered into the sector, and facilitating knowledge and awareness across the sector – similarly the International Water Journal of the IWRA.

For these organisations a strong Scottish proposition demonstrating the scale and depth of the Scottish water and wastewater industry supply, technology and research base, will be important, as will be the indication that Scotland wants to engage internationally and proactively.

Finally the Scottish proposition does not have to be elaborate or significantly expensive – particularly if the opportunity is there to develop the Hydro Nation offering and proposition into more of a brand for the international markets. The important factors are that it is used consistently and builds momentum, tells the full story of Scottish capability in the sector, and adds value to the individual company offering.

As with a number of country propositions, the major value of the proposition will most likely be on supporting export market entry, particularly to the more difficult but high potential international markets – where companies are able to benefit from scale, cost savings and profile that they would not be able to achieve on their own.

Once entry to the particular export market has been further developed by using a strong proposition, then it is assumed most companies will develop their own individual market contacts and detailed plans for market development.

In terms of the timescales for developing a value added Scottish proposition for the Scottish Water and Wastewater sector, then the ideal opportunity would be to launch and re-enforce the Scottish offering to the market at the IWRA World Water Congress XV to be hosted in Edinburgh in May 2015. Refer to http://worldwatercongress.com

This is the ideal opportunity to portray Scotland's expertise, knowledge and company base to an international and influential audience active across the different markets of the water and wastewater sector.

8.0 Conclusion & Recommendations from the Research

The research has highlighted a number of significant market opportunities for Scottish companies in a range of individual markets, matched as far as has been possible with the company base and the emerging strengths of the Scottish water and wastewater sector.

The international market overview demonstrates the scale of the international market, and the main drivers for change including regulation and the increasing urbanisation across countries, and the major infrastructure needs in developing countries, as well as the increasing application and use of new technology.

The initial market reviews were then assessed with SDI, and four more detailed market research exercises were undertaken with the markets selected, providing a range of information, contacts and advice for Scottish companies in approaching and developing each international market.

Based on the feedback received through the research and the information obtained from the different international markets, we then looked at the opportunity to develop an outline proposition for the Scottish water and wastewater sector, which will bring clear advantages for the sector as long as it both fully represents, and is actively promoted, as a proposition.

The research findings for each market has been used to examine how best Scottish companies can be supported to enter and develop these and other export markets, and this is captured in the final recommendations of the report as follows:

Recommendation 1

The opportunity for greater collaboration across the sector, not just in terms of export development, but across other areas such as research and innovation is compelling, but has not as yet taken place in any meaningful way outside the CREW initiative led by the James Hutton Institute. The collaboration development that was expected under the Hydro Nation still has to develop and is focused also primarily on the Scottish market.

- **It is recommended that SDI look to bring together and facilitate a series of workshop meetings around the export opportunities with 10-12 of the Scottish companies active in export markets and looking to expand further as to how best the companies could work together and be supported in their export development.**
- **A wider event should also be held for all the companies from the sector setting out the broad range of international market opportunities and the support available to allow them to research and identify opportunities in the export markets.**

Recommendation 2

The industry should engage fully with the proposed Water Innovation Service and the other support mechanisms available through SE and HIE, to develop, test and demonstrate the products and technologies coming to the market and adapt these as appropriate for the international markets. However as was clear from the research there is still a gap in the export technical capability of many of the companies in the sector. Subject to demand:

- **SDI should facilitate the delivery of a series of technical workshops targeted at the key sub sectors and covering areas such as licences, export documentation and registration, and market specifications to provide companies with confidence and a basic technical knowledge base when doing business in these markets**
- **SDI should facilitate with DFID, British Expertise and potentially British Water, a seminar on the approach and value of the aid market in the water and wastewater sectors, and how the tendering process is approached.**

Recommendation 3

- **The development of a compelling international Scottish proposition for the sector as set out in Section 7, with cross industry engagement, and to be launched at the IWRA Congress in May 2015.**

Recommendation 4

Within each of the Stage 2 market profiles developed there are clear opportunities and routes to market set out. In consultation with the company base, SDI should look to develop the following interventions over the coming year:

- **A learning journey for Scottish companies to at least one of the 4 priority markets identified – potentially Poland or Canada**
- **A second learning journey to India or South east Asia, if possible, should be restricted to the more experienced exporters with the export capacity required for these markets, and at a point when Scotland is able to tell the full story of its water and wastewater capability to the market.**
- **The opportunity to build the learning journeys, or indeed a more formal trade mission, should be built around the key exhibition and conference opportunities highlighted for each market in Appendix 3.**

Recommendation 5

- **The company base should be actively encouraged, and themselves actively develop, the links into bodies such as the Polish and Indian Business organisations listed, and organisations such as British Water, which has both an International and SME Forum** (although still to an extent dominated by the larger companies targeting the municipal markets)

Recommendation 6

- **SDI should focus one to one support for companies on the three key areas highlighted by the research:**
- **Identification of the specific market opportunities**
- **Partner search, identification and selection in export markets**
- **Identifying opportunities in export supply chains, and into tier1 & 2 suppliers.**

These three areas came back very strongly from the research across both markets and companies, and could be done at a tiered level reflecting the services provided to both high growth potential and the wider company base.

Recommendation 7

- **The sector should look to establish an international forum, and use this to drive and inform the above and future recommendations, but also to facilitate cross sector engagement in terms of both export market experience and knowledge, and routes into the different markets – from sectors such as oil and gas and chemicals, which many of the companies are already part of and engage with.**

This concludes the report provided for the international market opportunity analysis for the Scottish Water and Wastewater sectors.

APPENDICES

upperquartile

Appendix 1 – Consultation List of Scottish Companies

The following Scottish water and wastewater companies and organisations were interviewed as part of this research:

- Aqualution Systems
- Atlantic Water
- Biomatrix Water
- Dryden Aqua
- Opus Maxim
- Panton McLeod
- Ross-Shire Engineering
- Scotmas
- Scott & Fyfe
- Scottish Water International
- The Scottish Association for Marine Sciences (SAMS)
- The James Hutton Institute
- The Environmental Research Institute, North Highland College
- University of the Highlands & Islands
- University of Strathclyde

Appendix 2 – Regional and Market Profiles

This appendix provides the initial ranking table of the markets researched in Stage 1 of the research project, with 1 being the best score and 6 being the lowest, and provides an overview of each market area highlighted in Section 5 of the final report.

Stage 1 Market Ranking Table

Country / Region	Summary Comments against Ranking Criteria	Initial Rank	Points discussed at Stage 1 meeting with SDI/SE & HIE, and additional review post meeting	Final Rank
Central Europe (Czech Republic, Hungary, Poland, Slovakia, Slovenia, Ukraine, Croatia, Serbia and Albania)	**Current Scottish company export experience –** Many companies are already working here according to the Innovas report (although the geographical breakdown is broad). **Regulatory regime and drivers – C**hallenging structural reforms in some areas, and the impact of EU Directives. **Legal and Taxes –** Corruption can still be a major challenge in this region. **Ease of doing business –** In EU countries more straightforward. **Available support in country –** UKTI have good coverage in this region. SDI do not as yet, with the majority of the markets served from Germany office. **Strengths against market needs –** Highlighted by many companies as a priority area (as well as others in Europe)	6	This geographical area was very broad ranging and too much to cover in one assessment as the country markets are relatively diverse. Those countries within the EU are easier to target and present key opportunities in meeting EU regulatory drivers. Countries progressing towards EU accession have a wealth of opportunity, but a less certain business environment which may not be as attractive. Scottish Water also has strong contacts and relationships in the Polish market. **Poland was selected based on it being an EU member state; a proven platform market to enter other Central European markets, and the potential ability to tailor a Scottish proposition building on Scottish Water's initial work in the market.**	3
Southern Africa (South Africa, Zambia, Madagascar)	**Current Scottish company export experience –** The survey identifies that this is not an area of strong export experience in terms of goods. In terms of consultancy services, slightly stronger - as an example, Mott MacDonald recently made an acquisition of a 900 strong consultancy firm in South Africa with the intention of further consolidating their Africa footprint	6	This is not a strong market region for Scottish Companies, other than in the consultancy markets. It is also not a logical first step region for companies aspiring to export.	6

	and opening up markets in other countries in Southern Africa. However generally low experience of market amongst Scottish companies. **Regulatory regime and drivers –** South Africa has a well-developed regulatory regime. **Legal and Taxes –** Similar legal system to the UK (South Africa). More complex in Malawi and Madagascar. If a company is incorporated in or managed from South Africa, it's considered to be South African for tax purposes. The question of residency also needs to be addressed to avoid double taxation. There is a challenging customs environment. **Ease of doing business –** South Africa ranks 41st on the World Bank rankings. Important to have trusted partners. **Available support in country –** Excellent UKTI presence in Johannesburg. **Strengths against market needs –** South Africa requires access to high tech products in the water and wastewater sector. Other countries are looking for more low tech solutions. Good experience fit amongst Scottish companies to contribute here, but perhaps not as straightforward a region to operate in as South East Asia (for a UK company).		The Southern African market overall was not as attractive based on research as other regions in the study. It was therefore confirmed not to take this region forward to Stage 2.	
China	**Current Scottish company export experience –** Amongst the companies reviewed in the Innovas Consulting report, there is some positive experience of China highlighted. **Regulatory regime and drivers –** Weak governance system, and corruption challenges. Lack of transparency, but gradually improving. **Legal and Taxes –** complex and rapidly evolving systems.	5	Although some positive experience has been highlighted in China, it is a highly complex business environment with major challenges around corruption and governance. The Stage 1 report highlighted that discussion was required as to the benefits of India vs. China for inclusion in Stage 2, and further to this discussion with SDI, India was selected for the reasons above.	5

	Ease of doing business – China currently ranks 96th on World Bank tables. **Available support in country –** SDI and UKTI representation, and growing presence and activity. **Strengths against market needs –** increasing requirement for western technology and innovative solutions to resolve water and wastewater challenges. Good potential, but difficult market to enter and grow, particularly for smaller companies. **General Comment (Stage 1)** – discussion with SDI/SE required to assess China and India – and which one should be taken forward to Stage 2 given limited number of markets within Stage 2 of research.			
India	**Current Scottish company export experience –** There are a reasonable spread of companies trading in India and several looking to this area as a future priority. **Regulatory regime and drivers –** barriers to trade and investment in some sectors resulting from regulatory constraints, local sourcing requirements, and import tariffs. **Legal and Taxes –** similar legal system to UK. **Ease of doing business** – Ranks 134th on the World Bank's doing business website. Well understood systems with strong SDI and UKTI links in the country. **Available support in country** – Good support available from UKTI **Strengths against market needs** – Huge challenges in the sector, representing good opportunity for emerging and tried and tested technologies. UK strong ties with India historically also important.	4	The UK has historically had strong links with India and the benefits of similar systems make this a more attractive place to do business than China. The water challenges in India are significant, particularly in the removal of arsenic. Scottish companies also have significant experience working in remote and difficult to access areas, skills that transfer well to some of the particular challenges that India faces. **India was therefore chosen to be taken forward for Stage 2 over China.**	4

Ireland	**Current Scottish company export experience** – Good and increasing, and a well-known and easily accessible market. **Regulatory regime and drivers** – similar to UK, and influenced strongly by EU directives, widely understood by UK companies **Legal and Taxes –** Similar legal regime to the UK and therefore easy to navigate. **Ease of doing business** – similar environment to UK and therefore familiar to Scottish companies. Ireland ranks 13th on the World Bank's doing business website. **Available support in country –** Good support available **Strengths against market needs –** Strong Scottish expertise in the water sector that is directly transferrable to Ireland as a result of the set-up of Irish Water. **General comment** – good starting market for Scottish companies wishing to expand into overseas markets – particularly in terms of SMEs.	1	Although some good opportunities exist in Ireland and the Innovas report highlights that some companies are operating with headquarters there, it was felt generally that the context is very similar to the UK and any public support to businesses would be more useful in targeting other geographies. Market intelligence and information on market entry and development is readily available to Scottish companies exploring this market. **It was decided to rank Ireland lower on the basis that any public export support provision will be of more benefit to companies for other geographical areas.**	5
USA and Canada	**Current Scottish company export experience –** There is reasonable experience of trading with the USA amongst the company sample presented in the Innovas report. It is a very diverse market in the USA while Canada is perhaps more tailored to Scottish company expertise, e.g. temporary water supplies. **Regulatory regime and drivers –** Complex regulatory system. **Legal and Taxes –** very complex legal system, however, good expert advice available. **Ease of doing business –** Can be very complex and good advice is required. The World Bank ranks the USA as 7th and	2/3	Further to discussion and review, it was agreed that the USA, whilst offering significant opportunity for some Scottish companies, was too diverse a market and competitive to allow an effective tailored strategy for Scottish companies. Canada was agreed as being an easier market entry with a good SDI presence in Toronto and Calgary. Initial research identified good opportunities in the leisure	2

	Canada as 16th for ease of doing business. **Available support in country –** Strong SDI and UKTI presence. **Strengths against market needs –** In a number of product areas such as components, instruments, high tech water and wastewater services. A good market for Scottish companies to explore with appropriate support.		market, temporary water supplies and cryptosporidium removal in particular.	
South East Asia (Thailand, Malaysia and Singapore)	**Current Scottish company export experience** – Not as strong as in other markets, but very good opportunities for expansion. The UK as a whole is a strong trading partner in this region. **Regulatory regime and drivers** – favourable, similar to UK environment. EU free trade agreements forthcoming. **Legal and Taxes** – Singapore and Malaysia have a similar legal framework to the UK **Ease of doing business** – Singapore is ranked top by the World Bank. Malaysia and Thailand are supported by excellent UKTI links, and Malaysia ranks 18th, and Thailand 26th by the World Bank. **Available support in country** – SDI office in Singapore, good UKTI presence in all 3 countries. **Strengths against market needs** – Significant synergies between the needs of the markets and Scottish expertise. particularly in Singapore and Malaysia. Consistent move towards high tech solutions, and instrumentation in the markets.	2/3	It was agreed that there was very good potential in this area and a similar business environment in relation to legal and regulatory issues makes it favourable. Active discussions are also ongoing with the Public Utilities Board from Singapore to discuss commercial opportunities for Scottish companies.	1

1. Central Europe

Central Europe focuses on nine specific countries: Czech Republic, Hungary, Poland, Slovakia, Slovenia and Ukraine and a further three countries which form the Balkans region; Croatia, Serbia and Albania. For the purpose of this report, the Balkans region is reviewed separately from the rest of Central Europe.

Central Europe – Excluding Western Balkans

The six countries which form Central Europe, have a combined population of 66.3 million. It is an extremely diverse region, encompassing fast growing economies such as Poland, with other regions such as Hungary, Czech Republic, Slovenia and Slovakia, all of whom are taking time to adjust to a mixture of independence and entrance to the EU, to Ukraine which has significant challenges just now with the conflict with Russia and the implications this is having on the population and country as a whole.

For all of these challenges Central Europe provides a significant opportunity for UK businesses to expand and develop their International Trade activities. Situated between Eastern and Western Europe this region, like no other in Europe, has an excellent opportunity to expand and grow in a range of sectors. The UK has a good export relationship with some of the countries within Central Europe, however the opportunity exists to enhance these relationships in others.

1.1 The Czech Republic: Market Overview

The Czech Republic has a population of c.10.5 million and is a developed, high-income country. Growth has been led by exports to the European Union, especially Germany, and foreign investment, while domestic demand is reviving. Most of the economy has been privatised, including banks and telecommunications. The country is part of the Schengen Area, having abolished border controls, completely opening its borders with all of its neighbours, Germany, Austria, Poland and Slovakia. Although the country is economically better positioned than other EU Members to adopt the euro, the change is not expected before 2019.

Economic Snapshot (% annual growth rate)

	2011	2012	2013-16
GDP	-0.9	-1.1	2.8
Export of goods and services	4.7	0.4	5.4
Import of goods and services	2.5	0.7	5.7
Inflation	3.3	1.4	1.7
Short-term interest rates (%)	1.0	0.5	1.2
Exchange rate (per £)	30.89	29.12	30.41

	2011	2012	2013-16
Population	0.1	0.1	-0.1
Unit labour cost	-3.5	-0.4	-0.8

Source: Oxford Economics

Economic Outlook

The Czech economy grew by a surprisingly strong 1.6% in Q4 2013. The statistical office indicated that investment was the main driver of growth. After a long period of retrenchment, Czech firms have started to raise their investment in the light of an improving external background, reflecting both rising foreign demand and a weakening exchange rate. GDP is expected to grow at a solid pace through 2014, reflecting both gradually rising domestic and external demand.

The economy has remained weak for longer than many other OECD countries and a hesitant export – led recovery is materialising, but significant reductions of the output gap are unlikely to take place in the short term, raising a fear of deflation. The take up of new technologies has also been slow in the Czech Republic, however there are hopes that this will start to increase over the next few years.

The Czech Government produced its National Reform Programme in 2013 in response to the current economic situation. As part of this strategy the government defined 24 priority measures for 2013 – onwards. Some examples of these priority measures include:

Renewable energy sources;

New Green savings ;

Transport infrastructure development ;

New methodology for evaluation and financing of research, development and innovation;

Technology seed fund;

Social Inclusion;

Infrastructure development linked to public health.

Trade

A pick-up in activity in the country's main trading partners should lead to a rise in exports in 2014. The largest trade partners for the Czech Republic include Germany, Poland, France and the UK. To ensure economic growth, the Czech Republic needs to expand widely its foreign trade, not only in the EU but also in the rest of the world. Czech Republic's exports to Asia were at almost constant rates, around 3 to 4% of total exports. Czech Republic's trade structure has transformed, with trading with Asia becoming more prominent.

Opportunities

The Czech Republic offers UK businesses a sophisticated market where English is widely spoken and where British products are well received. Czech Republic is located at the heart of Europe offering very good links to neighbouring markets. The country's well-developed infrastructure, and skilled labour force attracts strong flows of foreign direct investment. Opportunities for UK businesses lie in numerous sectors including: food & drink, consumer goods, retail, science & technology, education & training and advanced engineering.

Britain's exports of goods and services to the Czech Republic more than doubled over the period of 2000-2010. Bilateral trade was worth £6.7 billion in 2011. Over 300 British companies are present in the market, ranging from large investors to smaller service sector companies established by British entrepreneurs.

Several major British investors have chosen the Czech Republic as a base for their Central European headquarters. British products and services have a good reputation in the Czech Republic. High-value opportunities have been identified with a potential for British businesses.

Key strengths are in the automotive industry. Other advantages of operating here also include cheap labour costs and stability in prices and foreign investment incentives. The country is very reliant on manufacturing and needs to move towards more high tech industries.

The water and wastewater industry in the Czech Republic has suffered from historic under investment and the EU Urban Wastewater Treatment Directive and Drinking Water Directive has created a demand for expertise.

The harmonisation of EU Directives is resulting in market potential, up to around 2016, with further on-going opportunities to assist in meeting transition timelines until at least 2025. This will be in the areas of provision of consultancy services, but also opportunities in the supply of technology and goods.

1.2 Hungary: Market Overview

The population of Hungary is 9.9 million as at 2013. Hungary is a medium-sized, high-income and open economy. Hungary is a member of the Organisation for Economic Co-operation and Development (OECD) since 1995, a member of the World Trade Organization (WTO) since 1996, and a member of the European Union since 2004. The service sector accounts for over 60% of GDP and its role in the Hungarian economy is steadily growing due to constant investments into transport and other services in the last 15 years. Located in the heart of Central-Europe, Hungary's location plays a significant role in the rise of the service sector as the country's central position makes it suitable to invest.

Economic Snapshot (% annual growth rate)

	2012	2013	2014-17
GDP	-1.7	1.2	1.9
Export of goods and services	1.7	5.3	5.2
Import of goods and services	-0.1	5.3	5.8
Inflation	5.7	2.7	2.5
Exchange rate (per £)	355	332	232
Population	-0.3	-0.2	-0.2

Source: Oxford Economics

Economic Outlook

The Hungarian economy grew by 0.6% in the final quarter of 2013. The past year has seen a gradual rebalancing in terms of growth drivers towards domestic demand, a pattern that is expected to continue in 2014. Growth is expected to maintain to a large extent its current momentum in 2014 before fading gradually as the impact of the government's stimulus packages diminishes. Growth of 2.2% in 2014 is still above trend.

Thanks to a policy-induced rebound of domestic demand and solid exports, Hungary exited recession last year while keeping its budget deficit below 3% of GDP. Yet, sustainability concerns remain, as unorthodox policies will likely continue. Due to its location at the heart of Central Europe and its good infrastructure, Hungary's economy benefits from short transportation routes to major markets and industrial production centres.

Hungary's government is strongly committed to fiscal discipline, as it strives to reduce the country's dependency on external financing. Yet, populist consolidation depresses private investment and thereby puts potential growth and the sustainability of fiscal policy at risk.

Given this year's foreign debt of about 130% of GDP, a gross external financing requirement of USD 64bn, and considerable amounts of FX-denominated local debt, Hungary is strongly exposed to a deterioration of external funding conditions and a sustained depreciation of its local currency.

The current government tends to opt for populist unorthodox ad-hoc short-term policy measures that create considerable policy uncertainty. Economic policy favours industrial production at the detriment of services and strives to replace foreign by Hungarian (state) ownership in key sectors.

Trade

Hungary's largest trading partners include Germany, Russia, UK and France. Trade relations with Japan have been growing as Hungary has sought Japanese capital and technology and hoped to gain

a share of the Japanese market as that country opened its doors to foreign trade. Trade with China has also been increasing with the share of exports from China increasing to over 8% of total exports into Hungary. The share of UK exports to Hungary is expected to decline as Asian exports grow.

Opportunities

With a population of just over 10 million, Hungary is a strong location for foreign direct investment, and home to a strong domestic corporate sector. With an extensive road and railway network and skilled workforce the country is an ideal place for British companies to set up a branch serving as a gateway to the East. UK businesses can seek opportunity in the following sectors: electronics, engineering, software and life sciences. Opportunities exist also in tourism, transport, retail, food, environment and construction.

A well-qualified labour force is an excellent advantage here and its location in the centre of Europe is also advantageous. Corruption is a concern and Hungary is also very dependent on overseas lending. Opportunities in Hungary are similar to those in Czech Republic in terms of the water and wastewater sector, with historic underinvestment in the sector and the need to upgrade and modernise across its water and wastewater infrastructure and services.

1.3 Poland: Market Overview

Poland has a population of 38.5 million as at 2012. Although a number of Poles moved to other parts of the EU upon accession to the EU from 2004 onwards, there is increasing evidence that a number of Polish nationals are now relocating back to Poland to take advantage of economic prosperity in their own country once more.

Currently, Poland has one of the fastest growing economies in the EU. Having a strong domestic market, low private debt, a flexible currency, and not being dependent on a single export sector, Poland is the only European economy to have avoided the late-2000s recession. Although the Polish economy is currently undergoing economic development, there are many challenges ahead. The most notable task on the horizon is the preparation of the economy to allow Poland to meet the strict economic criteria for entry into the Eurozone. According to the Polish foreign minister Radoslaw Sikorski, the country could join the Eurozone before 2016.

Economic Outlook

Poland has become a major actor within the European Union (EU). With the population of about 38.5 million, and a Gross National Income (GNI) per capita of $13,080 (2013, Atlas method), Poland has the largest economy in Central Europe. Since joining the EU in 2004, the country's ambitions have been marked by the desire to fully catch up with the core of the EU in terms of economic development and living standards (Gross Domestic Product per capita currently stands at only 67% of the EU average) and to become one of the key participants in European debates.

Economic growth slowed considerably in 2012 and 2013. Overall GDP growth declined from 4.5% in 2011 to 1.9% in 2012 and 1.6% in 2013 amid slowing domestic demand. Investment declined as fiscal

consolidation and lower EU co-funded investments curbed public investment, while private consumption was lacklustre as a result of Euro Area recession, falling corporate and consumer confidence, high unemployment and subdued wage growth. Net exports, supported by the performance of German economy (Poland's main trading partner) were the sole driver of growth from late 2012 to mid-2013.

Monetary policy remains accommodative**.** The Monetary Policy Council started an easing cycle in November 2012, cutting rates by a total of 225 bps, bringing the reference rate to 2.5%. With economic activity below potential, weak labour markets, and subdued consumer demand, annual headline inflation dropped to a record low of 0.2% in June 2013. Since then, the inflation rate has increased to around 1%, which is still well below the National Bank of Poland's (NBP) target band of 1.5-3.5%.

Capital adequacy is strong (at 15.7% in September 2013, 90% of which is Core Tier 1 capital), and liquidity is high. In the first nine months of 2013, the profit of the banking sector stood at PLN 12 billion, which is in line with results in previous years. The deleveraging of the Euro area banks continued in an orderly fashion: a fall in foreign funding was offset by rising domestic deposits. Private sector credit growth was slightly above 4% in December 2013, due to an increase in household credit - in particular consumer credit, and despite a decline in credit to the corporate sector.

Trade

The bulk of Poland's goods exports will continue to be bought by large European countries like Germany, France and the UK as a result of the EU single market. However, although they are likely to remain a small proportion of total exports, the most dynamic trade relations will be with emerging Asia. This is forecast to be the case both in the short term, as the Asian economy recovers from its recent slowdown. China is anticipated to displace the US's position among Poland's principal non-EU export destinations in the longer term.

Opportunities

One of the main reasons why investors tend to choose Poland is its location at the very heart of continental Europe, part of the trans-European road network and easy access to 250 million consumers within a radius of 1000 kilometres. Poland is a significant market of 38 million consumers offering opportunities for UK businesses within the following sectors, engineering, electronics, software, life sciences, transport, retail, food and environmental sectors.

The value of exports from the UK to Poland in 2011 exceeded £3.6 billion, up 21.9% from the previous year. Poland has seen a strong growth in GDP, and strong opportunities in infrastructure investment. Key priority sectors are food, utilities ad metal products.

Water is one of the key sectors in Poland. The Polish water sector has seen major investments in the last couple of years. However, there is still a lot has to be done. Around 100, 000 km of wastewater pipe networking is targeted to be constructed by 2015, in addition to more than 11, 000 of small sewage treatment systems. Additionally about 360 sewage treatment plants require either to be refurbished or constructed. The exact investment figures for 2015-2020 is not yet known, but by way of example, the National Fund for Environment Protection and Water Management – the core

institution providing financial aid for environment and water management projects in Poland – has allocated (£ 400 billion) to water-related projects in 2013.

The opportunities in this sector include:

cooperating with Polish companies in the design and construction phases of projects providing innovative technical/engineering solutions

designing and constructing projects

selling a variety of water management equipment

supplying eco-friendly, biological components to e.g. sewage treatment plants.

The best route into the Polish market for UK companies is to identify suitable local business partners interested in launching their products. Having local partners simplifies arrangements with potential customers and limits any difficulties with language, business environment and contacts.

The Polish market and vast majority of local companies are already well established. Therefore, local companies are typically interested in long-term co-operation and, in some cases, in acquiring exclusivity rights. Companies should consider entering the Polish market as part of a long-term strategy.

1.4 Slovakia: Market Overview

Slovakia has a population of 5.4 million as at 2012. The Slovak economy is considered an advanced economy, with the country dubbed the "Tatra Tiger". Slovakia has transformed from a centrally planned economy to a market-driven economy. Slovakia adopted the Euro currency on 1 January 2009 as the 16th member of the Eurozone. Slovakia is an attractive country for foreign investors mainly because of its low wages, low tax rates and well educated labour force. In recent years, Slovakia has been pursuing a policy of encouraging foreign investment.

Economic Snapshot (% annual growth rate)

	2012	2013	2014-17
GDP	1.8	0.8	3.2
Export of goods and services	9.9	3.7	5.3
Import of goods and services	3.3	2.0	5.7
Inflation	3.6	1.4	1.7
Short-Term interest rates (%)	0.6	0.2	0.3
Exchange Rate (per £)	2.08	2.05	1.76

	2012	2013	2014-17
Population	0.2	0.1	0.1

Source: Oxford Economics

Economic Outlook

GDP grew by 0.4% in Q4 2013, with growth driven by both net trade and domestic demand as consumer and business confidence improved significantly in Q4. Growth should accelerate further in 2014, helped by the gradual pick-up in foreign demand. However, a weak labour market will remain a drag on growth this year as unemployment is expected to decline only modestly this year.

Trade

Foreign trade is important to Slovakia's economy. Crude oil, natural gas, machinery, and transportation equipment are Slovakia's main imports. Exports include machinery, chemicals, fuels, steel, and weapons. The Czech Republic, Austria, Germany, and Russia are Slovakia's leading trade partners. The upward trend in import business was stimulated by increased deliveries for the automobile industry as well as the electronic home entertainment sector, along with growing purchases of crude oil.

Opportunities

Slovakia is a country of 5.4 million strategically located at the geographic heart of Europe. Slovakia's stable macroeconomic policies have made it a good place for exporters to do business. The best prospects for UK businesses include: machinery, medical equipment, automotive parts and components, chemical products and plastics.

Slovakia benefits from political and economic stability and inexpensive skilled labour. Again, it's strategic location is a major advantage, close to European transit corridors directly to Western and Eastern Europe. However, it is largely dependent on the Eurozone and a number of foreign owned banks.

1.5 Slovenia: Market Overview

Slovenia has a population of just over 2 million people as at 2013. Slovenia is a developed country, strategically located between the Balkans and Western Europe. It was the first new member of the European Union to adopt the euro as a currency in January 2007 and it has been a member of the Organisation for Economic Co-operation and Development since 2010. Slovenia has a highly educated workforce, well-developed infrastructure, and is situated at a major transport crossroad.

Economic snapshot (% annual growth rate)

	2012	2013	2014-17

	2012	2013	2014-17
GDP	-2.4	-1.8	1.0
Export of goods and services	1.6	1.9	2.1
Import of goods and services	-3.8	-1.5	2.2
Inflation rate (%)	2.6	1.8	2.0
Short-Term interest rates (%)	0.6	0.2	0.3
Exchange rate (per £)	2.08	2.05	1.76
Population	0.1	0.1	-0.1

Source: Oxford Economics

Economic Outlook

Slovenia's economy continues to face considerable headwinds in both 2013 and 2014. Domestic demand remains depressed by the combination of a severe credit crunch, fiscal consolidation measures and rising unemployment levels, leaving net exports as the sole source of growth. Slovenia's economy is expected to shrink by 1.4% in 2014.

Trade

Slovenia has embarked on a sluggish export-driven recovery, as domestic demand suffers from ongoing corporate deleveraging and weak credit growth on the back of substantial problems in the country's banking sector. Slovenia's main trading partners are Germany and Italy, both accounting for 18% of its exports in 2012. Likewise, Slovenia's imports also largely come from these two countries, although in the medium to long term, there will be increasing Asian imports.

Opportunities

Slovenia is a Central European market which offers numerous opportunities for Scottish companies; it is a sophisticated market with a high purchasing power. Slovenia lies right in the middle of one of the world's most exciting business regions. It sits on the intersection of several of Europe's historical crossroads. British services and goods are recognised as quality products. Slovenia is investing in infrastructure development, environmental projects and regional development. There are opportunities for businesses in several sectors including education & skills, tourism, infrastructure, urban regeneration, ICT and financial & business services.

The country has excellent infrastructure and a very well educated workforce. Its strategic location between the Balkans and Western Europe is a key advantage, particularly for companies interested in accessing both of these markets. Structural reforms have been slow and the country has a weak corporate sector.

There are some key opportunities in Slovenia for developed nations with expertise in water and wastewater technology. Water recycling and reuse is a key opportunity area and introducing innovation into wastewater treatment. This could present opportunities to introduce new western technologies to the country and Scotland, along with others in Europe will be well placed to do this.

1.6 Ukraine: Market Overview

Due to the current state of conflict in Ukraine, the majority of the rest of the world has placed trading restrictions with Ukraine and Russia which is hampering the day to day export trade in and out of the country. The conflict on the ground is also making it extremely difficult and dangerous for Western businesses to continue to engage in commerce inside the country.

Other concerns for Ukraine now are the developments in the Euro zone and the state of the global economy together with resolution of the political crisis in the country. Confidence in the government and the state institutions is low. Economic growth remained weak for the last two years. After five consequent quotes of economic slowdown started in the second half of 2012, Ukraine's GDP posted growth of 3.7 percent y/y in 4Q 2013 driven by good harvest and low statistical base. This brought FY GDP growth to 0.0 percent (after 0.2 percent in 2012). Performance of the key sectors remained week due to weak external conditions and delays in domestic policy adjustment.

Economic growth is expected to recover slightly in 2014, however the risks for this forecast are still substantial. On external side, the main risk is a protracted crisis in Europe, leading to lower demand for exports and more difficult access to global capital markets. Domestically, the main risk is a failure to implement macroeconomic rebalancing (preferably anchored in a program with the IMF). Delays in macroeconomic adjustment could mean that the forced adjustment will be much sharper. Ukraine's access to financing is already limited by investor concerns over the sustainability of its macro framework, political situation and the poor investment climate.

To support the banking industry, the World Bank is actively working with the Government and the National Bank of Ukraine and other financial regulators on strengthening the policy and regulatory role of the state in the financial sector, while consolidating state ownership of financial institutions.

Evidence shows Ukraine is facing a health crisis, and the country needs to make urgent and extensive measures to its health system to reverse the progressive deterioration of citizens' health. Crude adult death rates in Ukraine are higher than its immediate neighbours, Moldova and Belarus, and among the highest not only in Europe, but also in the world.

The unemployment rate increased to 9.5 percent at the beginning of 2009 as a result of the global financial crisis, and today stands at 7.5 percent. While firms in the country face a shortage of skilled workers, many university graduates can't find employment or end up in jobs that do not use their skills due to skills mismatch.

Literacy and school enrolment rates are high in Ukraine. However, larger budget allocations to education have not resulted in improvements in the quality of education. Ukraine's priority is to make better use of the resources allocated for the sector by significantly downsizing the school network to fit the smaller (current and projected) cohorts of students.

Ukraine has tremendous agricultural potential and could play a critical role in contributing to global food security. This potential has not been fully exploited due to depressed farm incomes and a lack of modernization within the sector. The establishment of a legal framework for secure land ownership, development of an efficient registration system, and ensuring free and transparent land markets are important elements of a policy framework that could facilitate agricultural development in Ukraine.

Ukraine is one of the most energy inefficient countries in the region and restructuring and upgrading its energy sector continues to be one of the key development challenges for the Government. The sector faces problems maintaining security, reliability and quality of supply due to delays in energy sector reform, poor financial condition of energy sector enterprises, lack of investments, and deferred maintenance in aging infrastructure. These factors threaten the sustainability of economic growth, degrade the environment and increase the cost of social services. Improving them is among Ukraine's top strategic priorities.

The municipal and services sector in Ukraine suffers from decades of under investment and poor maintenance. The need to invest in water and wastewater utilities is growing dramatically and the existing low tariff levels are a major limitation to the sustainability of utilities. The need for rehabilitation is exacerbated by the overall high energy consumption in water production and wastewater treatment. Improving service delivery through rehabilitation of infrastructure and promotion of energy efficiency solutions offers the possibility of driving utilities towards financial sustainability while providing improved services.

Trade

According to the data provided by the Government Statistics Agency in the year of 2013 United Kingdom ranks as 9th (2012 – 11th) biggest trade partner of Ukraine (2.2% of all trade in goods and services compared to 1.8% in 2012) and 4th biggest trade partner in Europe (6.5% of European volume of trade compared to 6.0% in 2012).

During the year of 2013 in comparison to the same period of 2012 the total volume of bilateral trade in goods and services between the United Kingdom and Ukraine has grown by 11% and amounted to almost $3.5bn.

The volume of goods and services exported from Ukraine to the United Kingdom grew by 0.7% and reached $1.3bn. At the same time volume of goods and services imported from the United Kingdom to Ukraine grew by 18% and amounted to $2.2bn. The trade balance of bilateral trade in goods and services during the year of 2013 caused a deficit for the Ukrainian side of $887m compared to $573m.

Main indicators of bilateral trade in goods and services between Ukraine and the United Kingdom *$ billion*	**2009**	**+/-**	**2010**	**+/-**	**2011**	**+/-**	**2012**	**+/-**	**2013**	**+/-**
Total	**2,2**	**-38%**	**2,5**	**12%**	**3,0**	**19%**	**3,1**	***6%***	**3,5**	***11%***

Export	0,9	-33%	1,1	17%	1,2	11%	1,3	*5%*	1,3	*0,7%*
Import	1,3	-42%	1,4	8%	1,8	24%	1,8	*6%*	2,2	*18%*
Balance	-0,4		-0,4		-0,582		-0,573		-0,887	

During the period of 2013 the most imported types of goods from the United Kingdom to Ukraine were:

chemical industry produce (26%):

pharmaceuticals (11%),

miscellaneous chemical products (5%),

tanning or dyeing extracts (4%);

land vehicles other than railway or tramway rolling stock (25%);

machinery and mechanical appliances (13%);

textiles and textile articles (7%);

prepared foodstuffs, beverages, spirits and vinegar and tobacco (6%)

Opportunities

The municipal and services sector in Ukraine suffers from decades of underinvestment and poor maintenance. The need to invest in water and wastewater utilities is growing dramatically and the existing low tariff levels are a major limitation to the sustainability of utilities. The need for rehabilitation is exacerbated by the overall high energy consumption in water production and wastewater treatment. Improving service delivery through rehabilitation of infrastructure and promotion of energy efficiency solutions offers the possibility of driving utilities towards financial sustainability while providing improved services.

The ongoing issues between Ukraine and Russia with regards gas supplies has significant implications for the water sector, as at present the whole water sector is focused towards attaining standards set out in EU directives guiding policies and reform. At present, most of Ukraine's water and wastewater utilities are state owned. However, the anticipation is that if federalisation occurs these utilities will have to be transferred by the central government to local regional authorities or governments. This could result in autonomous water authorities, with their own regional legislation and tariffs, creating further uncertainty.

Ukraine remains an exceptionally uncertain market given the current instability in parts of the country and limited donor assistance. As the country stabilises, the priority will be focusing on

governance and rule of law firstly, followed by infrastructure rehabilitation across the sectors (gas, energy, water and wastewater). The present situation makes it difficult to predict what market opportunities may open up as the country stabilises.

1.7 The Balkans – Croatia, Serbia and Albania: Market Overview

This section summarises the Balkans region which for the purposes of this project covers Croatia, Serbia and Albania. These three countries have a combined population of 14.1 million. This region has experienced many challenges as a result of the economic recession, however it also has a number of advantages to companies interested in operating there.

Its geographic location, situated between the EU and South East Europe provides a number of benefits for attracting Foreign Direct investment. The fact that Croatia is part of the EU also provides benefits for the region as a whole in terms of attracting significant EU funds.

The short term outlook for growth is limited, however there are signs that in years to come the region has the potential to develop and grow with FDI from countries such as Scotland.

Market Overview: Croatia

Population	4.253 million	2013
GDP	$57.54 billion	2013
GDP growth	-1.0%	2013
Inflation	2.2%	2013

Croatia entered the European Union (EU) on July 1, 2013 as the 28th member state. The government has been striving to raise Croatia's competitiveness to compete in the large EU market and maximize the opportunities that membership brings, especially the absorption of a large amount of EU Structural Funds.

Before the global financial crisis of 2008-09, the Croatian economy grew at a healthy 4-5% annually, incomes doubled, and economic and social opportunities dramatically improved. The prolonged crisis is testing this progress, as well as Croatia's aspirations, as the country is now entering its sixth year of recession, having lost over 12 % of its output.

Gross Domestic Product (GDP) is estimated to fall by 0.5% in 2014. There is more optimism about the prospect for growth in 2015, with exports projected to pick up in the Eurozone and private investments expected to increase. The privatization of large state-owned enterprises (SOEs) and the availability of EU funds (in net terms about 2% of GDP per year) should also help growth prospects in the medium term. The structural reforms that the Government has launched for labour, pension, and social benefits - as well as areas in the investment climate -could help stimulate job creation,

productivity, and social cohesion. However, the outlook for the short term in Croatia remains difficult.

Unemployment rose to 17% at the end of 2013 and youth unemployment, at over 40%, remains one of the highest in Europe. The private sector has been bearing the brunt of the crisis with most jobs lost in manufacturing, construction, and trade. Public debt is estimated to have risen above 64% of GDP in 2013 and external debt will likely be close to 103% of GDP.

Before the recession, poverty was below 10% and mainly affected those without a job for more than three years and low-skilled workers but the protracted recession has led to an increase, and the poverty rate now stands at 18%. Today, due to the prolonged recession, the profile of the poor is changing, with normally economically active, better educated and younger people living in urban areas falling into poverty.

The Croatian economy is less competitive than its peers. From 2007 to 2013, Croatia's private sector share of GDP remained at 70% - lower than its EU peers. To achieve private sector-led growth and faster EU convergence, actions are needed to liberalize the labour market, jump-start enterprise restructuring and the kind of new business creation and old firm exits required for the economy to reorient itself toward one reliant on knowledge, innovation, and transit-related services to maximize its geo-economic advantage as Europe's transport hub.

Croatia spends 7.8% of it GDP on health, among the highest for new EU members. Like most other European countries, Croatia is expecting profound changes in its population structure over the next 50 years, as the elderly population grows and the need for health services and long-term care services rise. A challenge is to provide better health services and improve efficiency while reducing public spending on health.

Substantial reforms and improvements have been made in the Croatian education sector, but advances have been slow in improving the efficiency and the quality of higher education to better respond to the needs of the labour market. While more children and youth are enrolling in school programs (60% at the pre-school level, near universal enrolment at the primary level, and 88% at the secondary level), Croatia's enrolment levels remain below the EU and the Organization of European Cooperation and Development (OECD).

Croatia has the geopolitical advantage of being situated along three pan-European transport corridors linking the EU and South East Europe and the Croatian authorities have invested heavily in developing this transport network. Prior to its accession to the EU, Croatia launched major reforms for the railway sector, in compliance with EU directives. However, the sector still, faces numerous institutional and organizational issues and challenges. Croatia's accession to the EU provides unique opportunities for the country to modernize its key international corridors through the use of EU Structural Funds, and to open up the railway sector to increased investment, market competitiveness, and efficiency.

Croatia remains an ecological treasure in Europe, with 47% of its land and 39% of its sea designated as specially protected areas and areas of conservation. Croatia boasts 19 National and Nature Parks, with some- such as the Plitvice Lakes National Park - designated as United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage sites. Croatia's natural beauty draws

in millions of tourists each year, with tourism revenues representing around 15% of the country's GDP. Preservation of the environment is high on the development agenda and has been a requirement for European Union membership.

With EU membership, Croatia became party to the 2020 Climate and Energy Package, a set of binding legislation that aims to ensure that the EU meets its ambitious climate and energy targets for 2020 Croatia is doing well on greenhouse gas emissions (GHG). Today these emissions are smaller compared to the baseline of 1990 - amounting to less than 0.1 percent of global emissions. On the other hand, Croatia needs to put more effort into scaling-up renewable energy resource (RER) and energy-efficiency (EE) programs to alleviate energy security concerns and improve access to reliable and affordable energy imports

Opportunities

Croatia already imports 72% of its goods from Europe, of which UK goods represent a value of approximately £1.5 million. Currently, the top UK exports to Croatia include medicinal and pharmaceutical products, industrial machinery, transport and telecoms equipment. There are two key benefits to trading with Croatia with its recent EU member status. Trade traffic will no longer require customs clearance, and current import taxes levied on trade between EU states and Croatia will cease, providing an increased margin for UK businesses. In addition, Croatian customs law will be aligned with EU legislation, affording UK businesses increased simplification and improved customs control opportunities.

Approximately 50% of the Croatian population speaks fluent English which can be a significant advantage when doing business in the country for UK businesses. Croatia also has a very sophisticated online infrastructure, with high levels of internet access throughout the country.

As well as the benefits of a shared language and strong online capability, large and continued investment in almost all areas of national infrastructure has supported recent Croatian growth and is set to increase with EU membership. This is projected to ensure future economic stability and development, providing UK businesses with a secure trading partner for years to come.

Serbia: Market Overview

Population	7.164 million	2013
GDP	$42.52 billion	2013
GDP growth	2.5%	2013
Inflation	7.7%	2013

Serbia has passed through a period of dramatic change during the previous fifteen years. The impact of the international financial crisis and numerous rounds of elections have slowed down necessary structural reforms in the country. However, more recent trends point to a move toward greater fiscal responsibility and a reengagement on critical issues such as state owned enterprise reform, financial sector reform, and public sector efficiency. In January 2014, Serbia started membership talks with the European Union (EU) after making significant progress in negotiations with Pristina, Kosovo. The authorities have also made tough political decisions, including the arrest and extradition of the last of the country's indicted war criminals that remained at-large.

Serbia has pursued these reforms while struggling to recover from the impact of the international financial crisis - which led to a 50% spike in poverty and a similar jump in unemployment in the country**.** As in many countries, the challenge in Serbia is translating a tenuous economic recovery into jobs and poverty reduction in a tight fiscal environment. As a result, Serbia needs to become more competitive and increase productivity in the country.

As detailed in the 2012 Country Economic Memorandum (CEM), reform in the country will require attracting and adopting new technologies, which, in turn, depend on a the existence of a supportive business environment, capable institutions, a skilled labour force, and high-quality infrastructure.

Growth in Serbia for 2013 is estimated at 2.5%, but is expected to decline to just 1% in 2014, reflecting the impact of fiscal tightening, lower inflow of investments, and the ongoing fragile situation in the domestic and international financial sectors. More robust growth rates of around 2-3% are forecasted over the medium term. Serbia's per-capita Gross Domestic Product (GDP) was approximately $6,134 in 2013. The poverty rate stood at 9.2% in 2010, up from a low of 6.1% in 2008. Growing unemployment led to a record high unemployment rate of 24% in October 2011, which eventually ebbed to around 20% at the end of 2013.

Serbia's main exports are cars and other products from the automotive sector. Automotive exports have become the most important sector following significant investments from Italian carmaker FIAT. Almost 90% of all Serbian exports go to Europe—55% to the EU and about 33% to the Central European Free Trade Agreement (CEFTA) region. Exports of services are also gaining in importance, reaching 10% of GDP in 2013.

Going forward, Serbia's main challenge is to improve living standards in the country and transform economic recovery into jobs in a tight fiscal environment. Increasing exports, productivity, and competitiveness are recommended actions that can help propel the country's economic growth

Opportunities

Serbia currently operates a trade deficit of around 6 billion US dollars. FDI accounts for around 20 billion US Dollars per annum, with Italy, Germany, Russia, China and Hungary the main exporters. A range of goods and services are exported to Serbia with road vehicles, oil, gas, manufacturing and medical devices being the largest by monetary value.

It is anticipated that UK trade with Serbia will increase with full EU membership. Serbia has already signed a Free Trade Agreement with the rest of the EU, however a small number of products still have annual import quotas which place certain restrictions on trade and limit opportunities.

Water, sanitation and treatment continue to be the most underdeveloped parts of the Serbian water sector and have the greatest need of investment. Projects and funding are frequently taking a back seat in the aftermath of the severe flooding which damaged the existing water and irrigation infrastructure.

Serbia's objectives are to increase available clean water, increase the number of connections to the public water supply system, increase water quality overall and construct a number of new treatment plants, upgrade existing ones and decommission poorly functioning ones. Careful water management will be a major priority. Currently, Serbia has severe problems with industrial water pollution and wastewater management, and this will also be a focus in coming years. However, the improvement of these areas will be hampered by ongoing economic uncertainty, so the country will to look to foreign companies and governments for the loans and expertise it needs to meet these challenges.

Albania: Market Overview

Population	2.774 million	2013
GDP	$12.90 billion	2013
GDP growth	1.3%	2013
Inflation	1.9%	2013

Albania is a middle-income country that has made enormous strides in establishing a credible, multi-party democracy and market economy over the last two decades. Albania has generally been able to maintain positive growth rates and financial stability, despite the ongoing economic crisis since 2008.

Before the global financial crisis, Albania was one of the fastest-growing economies in Europe, enjoying average annual real growth rates of 6%, accompanied by rapid reductions in poverty. However, after 2008 average growth halved and macroeconomic imbalances in the public and external sectors emerged. The pace of growth was also mirrored in poverty and unemployment: between 2002 and 2008, poverty in the country fell by half (to about 12.4%) but in 2012 it increased again to 14.3%. Unemployment increased from 12.5% in 2008 to 16.9% in 2013, with youth unemployment reaching 26.9%.

The recovery to growth rates above 3% in 2011 moderated in 2012 and 2013, reflecting the deteriorating situation in the Eurozone and the difficult situation in the energy sector. Real Gross Domestic Product (GDP) growth dipped to a low point of -2.3% in the third quarter of 2013. A rebound is expected in 2014, but growth is also expected to stay below the country’s potential over the medium term.

Albania's labour market has undergone some dramatic shifts over the last decade, contributing to productivity growth. Formal non-agricultural employment in the private sector more than doubled between 1999 and 2013, fuelled largely by foreign investment. Emigration and urbanization brought a structural shift away from agriculture and toward industry and service, allowing the economy to begin producing a variety of services - ranging from banking to telecommunications and tourism.

Despite this shift, agriculture remains one of the largest and most important sectors in Albania. Agriculture is a main source of employment and income – especially in the country's rural areas – and represents around 20% of GDP while accounting for about half of total employment. Albania's agricultural sector continues to face a number of challenges, however, including small farm size and land fragmentation, poor infrastructure, market limitations, limited access to credit and grants, and inadequate rural institutions.

Looking toward the future, Albania is focused on supporting economic recovery and growth in a difficult external environment, broadening and sustaining the country's social gains, and reducing vulnerability to climate change – particularly through improved water resource management. Key challenges for Albania going forward include early resumption of fiscal consolidation and strengthened public expenditure management, regulatory and institutional reform, reduction of infrastructure deficits, and improvement in the effectiveness of social protection systems and key health services.

Opportunities

There is very limited international trade with Albania at present by UK businesses. The opportunities exist for closer collaboration over the coming years as Albania continues to develop itself into a credible trading region within the Balkans.

Specific projects and strategies to improve water resource management which expect to be implemented over the next 10 + years will provide a range of opportunities for countries with available FDI and strong export capability.

2. Southern Africa

Southern Africa – Overall Market Context

The countries reviewed in this section are South Africa, Zambia, Malawi and Madagascar. Southern Africa is an extremely diverse region covering developed economies such as South Africa and low income countries such as Malawi. It is also geographically diverse with large water stressed areas in the south and water rich areas to the north. The management of water resources in particular presents a key challenge to the Southern Africa Development Community (SADC).

Southern Africa presents good opportunity for UK businesses to expand and develop their activities and serves as a good platform for expansion into the African continent. Key infrastructure developments across the region, and particularly South Africa will boost trade and development opportunities significantly.

Across Southern Africa as a whole there are key challenges in ensuring rural communities have access to water and sanitation services which involves the provision of low tech solutions that have minimal operation and maintenance requirements.

2.1 South Africa

South Africa has a population of 50.7m (UN, 2012). Poverty is still widespread and has a high crime rate associated with high unemployment. South Africa has one of the continent's largest economies, though went into recession in May 2009 following a sharp slowdown in the mining and manufacturing sectors. The construction industry, on the other hand, benefited from a huge programme of government investment ahead of the 2010 World Cup.

South Africa is a member of the BRICS group of emerging economies with China, Brazil, Russia and India.

Economic snapshot (% annual growth rate)

	2011	2012	2013-16
GDP	3.5	2.5	3.8
Export of goods and services	5.9	0.1	5.5
Import of goods and services	9.7	6.3	4.3
Inflation	5.0	5.7	5.3
Short-term interest rates (%)	5.6	5.1	6.4
Exchange rate (per £)	13.05	13.62	14.63
Population	0.6	0.5	0.5
Unit labour cost	-0.9	-5.5	0.9

Source: Oxford Economics

Economic outlook

The economy of South Africa continues to grow, driven largely by domestic consumption and a rising middle class. Domestic demand will continue to be the key driver of growth, although at a slower pace than in 2012. The Rand remains fairly weak, assisting exporters to provide competitiveness.

Trade

More than half of South Africa's trade is with developed regions, like the EU and Japan. The other BRICS countries, Brazil, India and China doubled their exports to South Africa. South Africa's trade still relies on the developed countries, but there is a shift towards developing countries and competition is therefore increasing. The UK remains a top trading partner with South Africa, worth over £9.6 billion. According to UKTI, the top UK exports to South Africa are:

- non-metallic mineral manufactures;
- road vehicles;
- beverages;
- medicinal and pharmaceutical products;
- petroleum and petroleum products.

Opportunities

There is a growing middle class and large infrastructure investments along with a strong financial sector and political stability which means excellent opportunity. South Africa's economy continues to grow and offers excellent potential for a wide range of UK businesses. One of the key advantages that South Africa has is that it operates under similar systems to the UK (e.g. legal and financial systems are based on those of the UK). There is also a minimal time difference which eases communications.

Ports: The government is expanding the infrastructure sector to help promote trade and economic development. There are plans extensions at 7 ports to increase capacity and improve efficiency. This programme will promote the involvement of SMEs. Durban port is under expansion and due for completion in 2019.

Infrastructure opportunities in South Africa are worth £90 billion. Further projects until 2020 are planned and are worth £270 billion. Infrastructure projects will cover the following areas:

- power, including green energy (£28 billion projected spend)
- **water and sanitation**
- rail and ports (£22 billion upgrade developments planned)
- hospitals and healthcare
- schools and universities
- urban regeneration projects, low cost housing and government buildings
- roads

ICT is another area of opportunity with a combined market value of £3.7 billion, projected to increase to almost double this by 2016.

Water and Wastewater Sector: In the water and wastewater sector there has been good progress made in improving provision, however, there are still approximately 3m people that live without access to safe water and 15m do not have access to adequate sanitation. Opportunities in this sector are broad ranging, of which a summary is presented below .

- Skills development - huge need for capacity building, providing management and technical support to municipalities. South Africa has an ageing engineering skillset.
- Department of Water – private sector skills required in asset management, design, build and operate projects.
- Water Transfer projects – In the next 10-20 years large transfer projects will be required (similar to Lesotho highlands water project).
- Wastewater treatment – a sector that has suffered from under investment. Opportunity for western developed technologies.

Doing business across Africa relies on developing good relationships which can take time to build up. Once connections have been established it is easier to operate. Linking up with a good local partner can be extremely useful and assist smooth transitions into the continent, provided adequate due diligence is undertaken. A good local partner can help set up networks which can be very beneficial to a new entrant.

In South Africa, the central government levies most direct and indirect taxes. The tax regime is set by the National Treasury and managed by the South African Revenue Services (SARS). SARS collects revenue, ensures compliance with tax laws and regulates and controls customs. The provincial governments and local authorities also have limited taxing rights.

The legal system is similar to that of the UK, however, there are various labour acts that will need to be investigated as part of any set up. South Africa has a complex import process. Businesses are encouraged to use a reputable customs clearance agent familiar with South African convention.

Zambia

Zambia has a population of 13.8m (UN, 2012). Poverty is widespread with a life expectancy which is one of the lowest in the world. However, Zambia has a reputation for political stability and a relatively efficient, transparent government.

Economic outlook

Zambia's growth decreased in 2013 mainly due to poor agriculture harvests. Investments in mining continue to drive other sectors, especially construction, transport and energy. In the medium term, growth is projected to increase to 7.1% in 2014 and 7.4% in 2015, and inflation is expected to fall below the 2013 level.

Zambia continues to strengthen governance and democratic processes, with government institutions developing and reinforcing transparency and accountability efforts, this makes it an increasingly preferable country to UK businesses looking at expansion into Africa. However, poverty remains high at over 60%. Increasing youth employment remains one of the biggest challenges as with other countries in Southern Africa. Real GDP growth is projected to increase to 7.1% and 7.4% in 2014 and 2015, respectively. Infrastructure investment, especially in mining, power generation and roads,

with the Link 8000 project, will ensure that growth remains robust. (African Economic Outlook 2014).

Trade

A recent visit to Zambia (July 2014) by the UK International Development Secretary highlighted the priority that is being placed on Zambia as a developing trade partner for the UK, with UKTI working on establishing a permanent presence. DFID's assistance programme is worth 600m Kwacha, and is increasingly focused on working with Zambian businesses and promoting economic development.

The top 5 importers to Zambia are South Africa, China, India, UK and Japan.

Opportunities

Zambia is bordered by eight countries and is therefore strategically positioned to act as a hub for trade and investment in Africa. Key opportunities in Zambia are in the following sectors:

- Copper and mining
- Agricultural
- Hydropower (a number of large projects are underway with more in the pipeline)
- Large scale infrastructure programmes in the pipeline, particularly in road and rail sectors and maintenance.

In terms of the water and wastewater sector, the EIB recently sanctioned 75m Euro for the rehabilitation and expansion of water and wastewater services, with the African Development Fund providing a further 50m Euro.

The country has a strong economic growth record and is increasingly diversifying beyond the copper sector. Foreign investment is expected to remain buoyant over the medium term, focusing largely on sectors outside of mining and copper.

Although political risk is low, Zambia is a relatively challenging business environment. Infrastructure remains poor, systems and processes are inefficient and corruption is widely spread.

An upcoming UKTI Trade Mission to Zambia in October will focus mainly on infrastructure and natural resource sectors and opportunities for UK companies. Legal and taxation issues in Zambia are under investigation, and from an initial review it is more complex than South Africa.

2.3 Madagascar

Madagascar is the world's fourth largest island with a population of 21.9m (UN 2012). It is the world's leading producer of vanilla. The African Union suspended Madagascar and EU froze aid after the 2009 coup. It has a GDP per capita of $990 USD.

Economic outlook

The political crisis ongoing since 2009 is still impacting on economic and social progress in Madagascar. Economic growth of 1.9% in 2012 and 2.6% in 2013 was far behind the estimated sub-Saharan average of 5.1%. This growth was mainly driven by extractive industries, agro-industry, banking, transport, livestock and fisheries. Growth in the economy is expected to speed up in 2014

and 2015 as the political situation reduces. In 2013, parliamentary elections paved the way for renewed economic and social development.

The country has many assets, such as tourism, a free zone for textile factories, ICT-related services and natural resources (agriculture and mining).

Trade

Approximately 2.9% of Madagascar's imports come from the UK. This is the lowest percentage of all trade partners. France is their leading trade partner with a 25.29% share. This is also reflected in exports. Other key trading partners are the US, Germany, Japan and Italy. Madagascar is a member of COMESA and SADC.

Opportunities

The country's water resources are shrinking due to climate change, uncontrolled use and alarming damage to the environment through organic pollution and forest fires. The sector also suffers from non-integrated water management, lack of well-structured coordination, a large number of operators and institutions whose activities overlap and cause wastage, government domination and a low rate of satisfaction of water services.

There are opportunities in Madagascar, but primarily in the international aid and NGO sector. Several International NGOs are active there in the field of water and sanitation provision. Language is a key challenge for those who do not speak French as English is not widely spoken. There may be opportunities for those seeking to export low price, low tech solutions to water and wastewater challenges in the developing world. Further information on these opportunities will be gathered at a UKTI trade mission at the end of September 2014.

Tax collection and revenue are centralised and tax evasion remains a significant problem in Madagascar. Customs duties and taxation is still high which can create a barrier. It ranks 148th on the World Bank ease of doing business and trends show that this is dropping year on year. On balance, it may be an unattractive market to UK businesses at the present time, however, the commitment by UKTI to facilitate a trade mission in September 2014 shows that there is some optimism and further investigation required.

It is also worth noting Madagascar's legal system is based on French civil law judicial system is slow and complex and has a reputation of corruption. On this basis it may be unfamiliar ground for UK and Scottish companies and may not be desirable.

2.4 Malawi

Malawi is a largely agricultural country with a population of 15.9m (UN2012). Links between Scotland and Malawi started with David Livingston's journeys in 1859 and since then the Scotland Malawi partnership has expanded and grown. It ranks at 171 out of 187 on the Human Development Index (HDI) and is unlikely to meet any of the Millennium Development Goals (MDGs). GDP per capita was $360 USD (World Bank 2011).

Economic outlook

The economy of Malawi is predominantly agricultural, with about 90% of the population living in rural areas and ranks one of the world's least developed countries. Agriculture accounts for 37% of GDP and 85% of export revenues and so the country is extremely reliant on agricultural exports. The economy depends on substantial inflows of assistance from multilateral development banks, and donor nations.

Real gross domestic product (GDP) growth is estimated to have increased to 5% in 2013, rising from 1.8% in 2012. This is attributed to a good tobacco season and strong recovery of growth in manufacturing, construction, and the wholesale and retail trade sectors.

The main short-term challenge for the government is to improve governance, while strengthening the enabling environment for private sector investment for sustained and inclusive growth. Malawi is on track to achieving four of the eight Millennium Development Goals (MDGs), it faces serious challenges in meeting the MDG targets relating to primary education and to reducing gender inequality and maternal mortality.

Trade

A key goal of Malawi is to achieve the top 100 countries of the World Bank Doing Business Rankings in the next two years. And the government is committed to turning Malawi around from being an aid-dependent to being a vibrant trading and investment nation. Like the other countries in this region, they belong to the Common Market for Eastern and Southern Africa (COMESA) and the Southern Africa Development Community (SADC). Access to these wide markets provide good opportunities for trade and investment.

Malawi has bilateral trade agreements with its two major trading partners, South Africa and Zimbabwe, both of which allow duty-free entry of Malawian products into their countries. The value of UK imports to Malawi sits at approx $30m USD, ranking 10th. South Africa and China are Malawi's largest trading partners.

Opportunities

Retaining close ties with Scotland and the UK, Malawi receives substantial development assistance from the UK Government's Department for International Development (DFID). A proportion of this spend, 2.9% was allocated to water and sanitation in 2012-2013. The University of Strathclyde in Glasgow is also actively undertaking research and development programmes in Malawi.

Opportunities for UK companies in the water and sanitation sector will mainly be around capacity development and mentoring (provision of professional services), innovative low tech water and wastewater treatment solutions that can be deployed mainly in rural areas to improve quality of life. High technology solutions will be undesirable here.

DFID is one of the largest donors to Malawi and water and sanitation is a key priority area with a total of £17m for 2011 – 2015 forecast spend. Malawi ranks at 157 out of 185 in the World Bank Doing Business guide making it a challenging environment with regards to business regulation and taxation.

3. China

Market Overview - China

China is a large and expanding market – UK exports to the country reached almost £4 billion between January and May 2012, up by 21% on the same period in 2011.

China is the world's great success story of the past 30 years. Since the reforming policies which were introduced in around 1978, China has changed beyond recognition. The previous regime has been transformed into a vibrant market-oriented economy with around 600 million people being lifted out of poverty.

The UK is one of Europe's largest investors in China, and among the largest destinations in Europe for China's outward investment. Between 2007 and 2011, China's economic growth rate was equivalent to all of the G7 countries' growth combined. China's success has been primarily due to manufacturing as a low-cost producer. This is attributed to a combination of cheap labour, good infrastructure, relatively high productivity, favourable government policy, and a possibly undervalued exchange rate.

(Source: British Embassy Beijing's *China in Numbers September 2012*)

China is either the 3rd or 4th largest country in the world (depending on definitions of territory) and is roughly the same size as the United States.

At the end of 2011, China's population reached over 1.37 billion, around a fifth of the world's total - made up of 56 ethnic groups, dominated by the Han (91.5%). China's population is likely to be overtaken by India's in 2025. China is the second largest economy in the world in nominal US dollar terms, and over the last 32 years, China has experienced uninterrupted growth averaging 10% per annum.

China became the world's largest goods exporter in 2009, ahead of Germany and the US; and is the world's second largest goods importer. China's urbanisation rate increased from 10.6% in 1949 to 51.27% in 2011. By 2050 the urbanisation rate is expected to rise to around 75%, and it is estimated that there are around 250 million internal migrant workers in China.

In 2011, 177.7 million people (13.3% of the population) were over 60; by 2030 the share is predicted to rise to 25% and by 2050, to 31%.

China Economic Overview (Growth in % GDP)

	2011	2012	2013-16
GDP	9.3	7.7	8.5
Export of goods and services	3.9	2.5	8.1
Import of goods and services	2.7	2.5	9.1

	2011	2012	2013-16
Inflation	5.4	2.6	3.2
Short-term interest rates (%)	5.3	4.6	4.4
Exchange rate (per £)	7.80	7.03	6.19
Population	0.6	0.6	0.6
Unit labour cost	15.4	15.2	14.2

Source: Oxford Economics

Trade

UK exported goods to China in 2011 were £8.77 billion. This is up by 21.4% from the previous year. (Source: HMRC). UK exports of services in 2011 were £3.2 billion, up by 19.5% from the previous year. China is the 14th market for UK service exports, 4 places up from the previous year. UK exports of goods and services in 2011 were £12.5 billion, up by 21.3% from the previous year. (Source: Office for National Statistics UK)

From January to May 2012 the UK exported £3.98 billion worth of goods to China. This is up by 21% from the same period in 2011. Since January 2012, China has risen from 9th place to 7th place in the UK's most important export markets by value (overtaking Italy and Spain). Imports, on the other hand, were up 5% at £11.70 billion, which was one down from 5th to 4th place. This, however, suggests a re-balancing of trade relationship may be beginning to take place. (Source: HMRC)

The value of UK goods exports to China from January to May of 2012 ranked 3rd among EU countries, after Germany and France. This is one place up from the same period last year (as we have overtaken Italy). (Source: MOFCOM)

At the end of 2011, UK was the largest EU investor to China, with a cumulated actual direct investment value of £11.70 billion. UK's direct investment to China from January to May 2012 was £282 million, the second largest EU investor to China after Germany. (Source: MOFCOM)

In 2010, Chinese investment stock in the UK was £28.8bn. (Source: Office for National Statistics UK)

Scottish Exports to China

Exports from Scotland to China were at their highest ever level in 2013, totalling almost £560 million.

Latest figures from the Global Connections Survey have shown a rise in food and drink exports and in sectors such as chemicals and engineering, contributing to a total increase of 30 per cent from the previous year. Our exports to China have increased by 88 per cent in five years, including a 30 per cent increase between 2011 and 2012 alone. It is clear that China sees Scotland, the land of invention, as an important business partner.

There are also close ties between our educational institutions. Heriot Watt recently signed an agreement to become the fifth Scottish University to establish a Confucius Institute. More than 8,000 people from China now study at our universities and colleges. Edinburgh, Glasgow, Aberdeen, Strathclyde and Heriot-Watt Universities all have Confucius Institute Status.

Science and Innovation

China co-authors more scientific research paper with the UK than with any other country except the US and Japan, jointly publishing almost 2,500 science papers a year, representing a key opportunity in the R&D field.

Education

The UK has more joint programmes with Chinese higher education institutions, more than any other country (131 in June 2011). (Source: British Council). Scotland has the same proportion of our own higher education population studying in China (3,300 students) as mainland China has in the UK [Ranked 16th - this does not include students visiting on short term language and culture courses], and over 500 British schools now offer Mandarin classes. (Source: British Council)

By the end of 2010, there were 43 sister city (province, county, district) relationships between the UK and China.

China's 12th Five Year Plan (2011)

The *12th Five Year Development Plan*, launched in 2011, clearly suggests that sustainable development is a top priority for China. Alongside water scarcity, pollution, labour conditions, product safety and the need for improved governance and accountability, the Plan emphasises:

Rebalancing the economy toward domestic consumption by becoming less dependent on external demand and investments. Refocusing attention on 'sustainable growth' rather than 'total growth' by investing in economic restructuring and promoting new emerging industries such as clean energy, biotechnology, and high-end manufacturing. Investing in a new model of 'harmonious socialist society' that focuses on providing disadvantaged groups and less-developed regions with social insurance schemes, health care, and education so that they also benefit from China's economic success. This has been a perennial problem, and the gap between 'haves' and 'have nots' has been increasing.

Economic Outlook

China's annual growth rate fell for seven straight quarters through the third quarter of 2012; however a pick up is forecast. With the euro area still in recession and US demand sluggish, the economy faces considerable headwinds in 2013. Furthermore, the new leader (appointed in November 2012) Xi Jinping and other policy makers are likely to unveil aggressive stimulus this year when they hope to revive an economy seen growing at its weakest pace since 1999.

Opportunities

Key sectors to watch include:

Iron and Steel

Utilities, including water infrastructure

Clean energy

Biotechnology

Telecommunications equipment

Electronic components

More than 350 million people will move to China's cities in the next 15 years. Without proper urban planning, design, construction focused on sustainable development, China may be forced to rebuild new infrastructure not long after it is put in place, leading to a large waste of energy and precious resources. A further cause for concern is that more and more of China's new cities and developments are adopting US urban development patterns; sprawl, 10-lane expressways and mega-blocks.

Fortunately, China's national government and an increasing number of local leaders recognize the drawbacks of this approach and seek a low-carbon development alternative. This work is aimed at promoting sustainable urban development patterns that encourage compact, mixed use, and transit-oriented development, as well as green transportation.

To reach this over- arching goal, the Sustainable Cities programme works the national and municipal governments to establish pilots and demonstrator projects in order to provide concrete examples of sustainable urban development in China's context; draw upon pilots to train local planning and design staff and inform policy developments at municipal, provincial and national levels and provide high-quality training programmes for officials, local experts and students.

Environmental degradation has been a significant side effect of migration and the growth of industry in China, causing serious air pollution, soil erosion, and water scarcity problems. The country continues to lose arable land both through soil erosion and economic development, increasing its dependencies on imported goods. Looking ahead, the Chinese Government faces several economic development challenges including:

To sustain adequate job growth for tens of millions of workers laid off from SOEs. The loss of the 'iron rice bowl' (Chinese idiom referring to the system of guaranteed lifetime employment in state enterprises) has meant that, along with migrants, there are many new entrants to the private sector workforce;

To contain environmental damage;

To address social strife related to the economy's rapid transformation and ageing population (a demographic consequence of the 'one child' policy that China implemented in 1979);

To reduce economic inequality as the gap between the rich and the poor continues to grow (according to official figures the top 10 percent of urban Chinese earn about 23 times that of the poorest 10 percent);

To achieve a shift from an export-oriented economy towards one more weighted towards domestic consumption.

In terms of the water sector, opportunities are vast. With almost 20% of world's population and only about 6% of global freshwater resources, China's water sector is a high priority area. Urbanisation and rising environmental awareness are driving rapid growth in urban water supply and wastewater markets. At the same time, water resource restrictions and concerns about food security have underlined the need for water efficient agriculture and irrigation and introduction of western technology, particularly in cities. Together, these markets are estimated to be worth EUR 60 to EUR 100 billion a year over the next ten years.

Doing Business in China

Chinese society is heavily influenced by the traditional values associated with Confucianism which promotes a strict system of norms and propriety. This determines how a person should act within a community, with hierarchy a central theme. In addition, there is little separation between business and private life in China. These traditional values can have a significant influence on employees' behaviour in a corporate setting.

The Mandarin term for business ethics is 'shang de'. Those committed to ethical business practice are known as 'Ru Shang' or 'Confucianism Trader', and being so is traditionally thought to be a route to success. The concepts of 'guanxi' and 'mianzi' are central to Chinese society and thus heavily influence business life. Guanxi is a deeply embedded system of relationships, personal connections, contacts and networks. The cultivation of guanxi can be thought of as a form of significant 'social capital' and is not something casually acquired by exchanging business cards or having a single meal together. Rather, relationships are formed over time and are based on trust and reciprocity.

It is common in China for an employee to take contacts with them when switching jobs as the guanxi is with the individual, not the company. Trading competitive information among one's guanxi network may, in some cases, also be considered an acceptable practice. Mianzi refers to the concept of 'face' – broadly defined as pride or self-respect, and its corollary – preservation of the self-respect of others. Mianzi is related to prestige and one's position in a hierarchy. Direct disagreement or confrontation with someone – such as a colleague or a person in a position of authority – may cause them to lose mianzi and is usually avoided. Thus, opinions can be difficult, but not impossible, to gather from employees because any proposal for improvement could cause their superior to 'lose face' by suggesting that they are in some way deficient.

That said, some successful Chinese and foreign senior figures find that they can overcome this problem by taking particular care to solicit opinions up and down the hierarchy before they have enunciated their own views. Employees will, however, be concerned not to appear unintelligent to their colleagues, so some sensitivity must be applied.

To date, the corporate governance framework in China has been weak owing to the legacy of a planned economy with substantial Party interference in the running of state-owned enterprises (SOEs). The lack of accountability and transparency has contributed to the problem of corruption and bribery in China. A 2011 survey by the American Chamber of Commerce in China of 318 US companies showed that there was significant dissatisfaction with corporate governance in China.

Companies expressed concerns over inconsistency in regulatory interpretations or unclear laws (42%), corruption (30%) and national protectionism (28%).

However, change is taking place, largely driven by the opening up of the markets to the international economy and the desire to attract foreign investment. The PRC National Audit Office, at the behest of the National People's Congress, has recently published the results of a major audit of state-owned agencies and banks in which 28 court cases involving fraud were uncovered during the audits. These reports have been published in conjunction with the Central Government's current campaign to demonstrate that the problem of official corruption is being addressed.

4. India

India has a population of 1.3 billion (UN, 2012) and is the world's largest democracy and second most populous country. The economy is fast-growing and powerful economy with a large and skilled workforce. However, corruption and poverty are still widespread.

As the fourth-largest economy in the world, India's recent growth and development has been one of the most significant that the world has seen. The country has seen transformation from dependence on agricultural imports to being a major an exporter of food. Urbanisation is a key challenge that faces India as approximately 10 million people migrate to towns and cities each year in search of jobs and economic opportunity. Huge investments in infrastructure are required to meet the needs of these urban areas and the rising middle class. It's GDP per capita is $1,498.87 USD (World Bank 2013).

Economic Overview (% annual growth rate)

	2011	2012	2013-16
GDP	7.5	5.0	6.9
Export of goods and services	18.3	5.8	10.8
Import of goods and services	18.4	9.8	11.0
Inflation	8.9	9.3	5.3
Short-term interest rates (%)	9.8	8.9	8.0
Exchange rate (per £)	85.39	86.84	78.03
Population	1.3	1.3	1.2
Unit labour cost	-0.8	-10.9	0.5

Source: Oxford Economics

Economic outlook

After growth of 4.8% in 2013 the World Bank forecasts that India will grow by over 6% in the next 2 years and 7% in 2016, with removal of quantitative restrictions on imports in 2001, opening up the economy to foreign businesses, especially in consumer goods.

Huge investment potential exists in sectors such as life sciences, manufacturing, energy, and infrastructure. India is an emerging biotech leader with a growth rate of 37% per annum - one of the highest in the world; expected to spend US $1 trillion on infrastructure by 2017; and the fastest growing telecom market in the world.

In July 2014 the Asian Development Bank noted that prospects are improving in India and a changing political landscape should bring about the opportunity to initiate reforms that have been previously

difficult to implement. The new Government has outlined a 10-point plan to revive the economy, placing infrastructure and investment reform at the heart of this. The pick up in overall GDP for India has been due to a strong agricultural sector, detracting from the fact there has been an overall slip of 0.1% (when agriculture has been excluded from the assessment).

Trade

The Asian economy is recovering faster than Europe and the USA, and as more Asian economies develop into middle-income countries, intra-Asian trade will be a key driver of trade growth in India. China is forecast to increase in importance as an export market. Europe, the Middle East and North Africa are currently the largest exporters to India with no changes expected in the long term. A free trade agreement between the EU and India is under currently under negotiation. 47% of the UK's trade with India is in relation to manufactured goods.

The UK's target to double trade to £23 billion with India by 2015 is progressing. In 2013, the total UK goods and services exported from the UK to India increased by 14% (January to September 2013).

UK's top goods exports to India currently include:

power generating machinery and equipment

general industrial machinery and equipment

electrical machinery and appliances

professional, scientific and controlling instruments and apparatus

UK is the third largest investor in India after Mauritius and Singapore and it accounts for 10% of India's total Foreign Direct Investment (FDI) inflow for the period from April 2000 to December 2013.

Opportunities

India has opportunities in all sectors as the economy grows and there is a natural synergy between the economies of the UK and India. The UK (and Scottish) companies have much to offer the Indian markets as it develops, particularly in finance, infrastructure, energy efficiency, education and health.

There are massive infrastructure investments planned by India to meet the demand of their ambitious growth targets. A selection of the key opportunities include the building of large number of metros; modernisation of airports and increasing ports capacity, and the **setting up new water and sewage treatment plants.**

Public-Private Partnership (PPP) projects are another area where UK companies can lend their expertise (potentially in the water and wastewater sector) - more suited to consultancy companies rather than those providing particular products.

There are also opportunities in improving road connectivity across the country, the setting up of industrial corridors to improve industrial infrastructure, trade etc., and the creation of large scale manufacturing zones.

Urbanisation is expected to increase the number of large cities rapidly. Companies can offer experience and expertise in delivering infrastructure projects and also green technologies. The UK has built a strong reputation in India in planning, design, engineering, construction and project management, green technologies, project structuring and financing.

The water and wastewater sector faces many challenges including surface water pollution; poor distribution system –water losses are at 40-50%; groundwater Contamination –Arsenic, Fluoride; lack of recognition of groundwater resource and lack of focus on wastewater management; the cost of water treatment and lack of uniform regulatory framework; and the impact of climate change on hydrological cycles

Key Opportunities in India have been identified as:

- Zero Discharge Systems
- Wastewater Treatment and Recycling Technologies
- Ultra Filtration Technologies
- Removal Systems for contaminants like Arsenic and Fluoride
- Sewage System and Pipeline Rehabilitation
- Consultancy and technology to reduce UAW and NRW
- Desalination Technology
- Rainwater Harvesting & Storm-water Management
- Packaged & Transportable Sewerage and Wastewater Treatment
- PPP Projects

Future investments reported by UKTI are summarised below. These cover the period from 2012 to 2031.

- Water Supply Rs 3209 billion
- Sewerage Rs 2427 billion
- Storm Water Rs 1910 billion
- Total Rs 7546 billion ~ £7.5 billion

A forecast capital expenditure of $1.2 trillion and operational expenditure of $1 trillion in infrastructure in next 20 years is reported.

There are a variety of benefits for businesses hoping to work in India including English is widely spoken; there is a common legal and administrative history; rising personal incomes are creating a new middle class; and the country serves as an excellent gateway to accessing south east Asia markets.

The Indian markets have a number of strengths (but also some clear weaknesses) Strengths of the Indian market include:

- fast growing economy with one of the world's largest youth populations;
- expanding emerging cities with more than 50 cities now over a million people;
- availability of skilled, low cost workforce;
- good network of banks, financial institutions and an organised capital market.

India is a price competitive market. Government contracts are awarded to the lowest bidder who meets the technical specifications. Consumers often prefer lower prices to quality or durability which is often not suited to European companies.

Key challenges of the market include:

India has 7 major religions and many minor ones and so business needs to be carefully planned to operate around the countless religious holidays and festivals.

It is an extremely price competitive market as above.

There are trade barriers in some sectors resulting from regulatory constraints, local sourcing requirements, and import tariffs. The European Commission's Trade and Investments Barriers Report, published in March 2014, points out that some progress has been made to dismantle trade barriers in India and negotiations are ongoing. The negotiations for a comprehensive FTA were started in June 2007 and are ongoing.

Protecting Intellectual Property (IP) remains a challenge and the risk of bureaucratic delays is very high. Land acquisition can be difficult, and there is a high risk of bribery and corruption which must be carefully managed. It can also be difficult to access to the right skills in the local workforce.

Despite growing wealth, the country still has very poor infrastructure, including distribution and logistics. This is a key consideration for companies wishing to export products. India is also a country of weather extremes with an extremely hot summer. Wet weather in the monsoon season can affect business and make infrastructure delivery particularly challenging.

The Bureau of Indian Standards (BIS) is responsible for the development of national standards. These standards are generally in line with international norms and most are harmonised with International Organization for Standardization (ISO) standards. India has also signed a Double Taxation Agreement with the UK and they make provision for advance rulings to guide investors and exporters on their tax liabilities, and on the customs and excise duty implications of transactions.

Overseas Aid in India

Key multi-lateral development banks and individual donors investing in the water sector in India are:

JICA $3.5 billion between 2006-2012 (Japanese)

World Bank $2.7 billion

ADB - Asian Development Bank allocation to the water and sanitation sector (and general municipal infrastructure) accounts for 8.87% of the total loans to India (30 loans ongoing at present), a total figure of $2.805.96m. This is much lower than the energy sector, which accounts for 34.04% of current lending, however, it is still one of the top sectors for ADB investments in the country. There is therefore significant potential in this area.

As of the end of 2012 DFID will provide no grant aid to India. Ongoing projects already financed are continuing with the target of completion by 2015. DFID assistance to India will focus on skill sharing

and provision of expertise in areas such as growth, trade and investment and health, or through investing in projects that create opportunity for the poor whilst generating an acceptable return.

DFID are currently looking at a Smart Cities initiative in India, likely to cover both consultancy and product opportunities.

To assist India in its efforts to better integrate into the world economy – with a view to further enhancing bilateral trade and investment ties the EU is also providing a variety of trade related technical assistance to India.

5. Ireland

Market Overview: Ireland

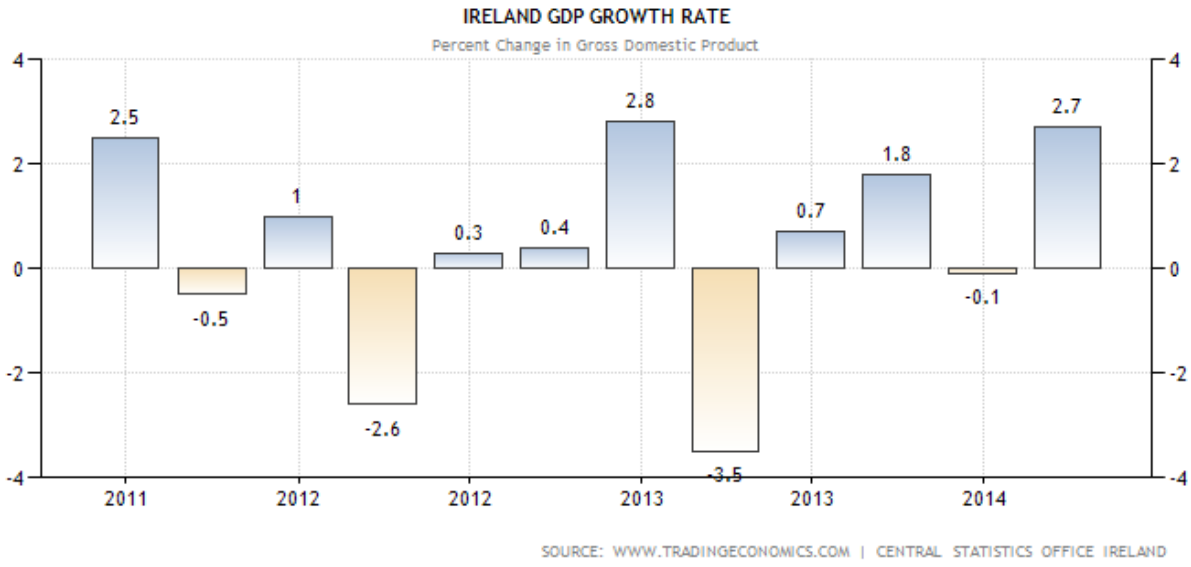
Ireland has a population of 4.59 million (April 2013) although this population has been reducing over the past 5 years. In 2011 there were 55,000 people living in Scotland who were born in Ireland and at least 20% of the entire Scottish population were of Irish heritage. A similar number of Scots are living in Ireland.

Ireland is the UK's fifth largest export market and imports more from the UK than any other country. The UK accounts for 34% of imports into Ireland. In 2012, total trade in goods and services from the UK to Ireland was £27 billion.

Ireland is the UK's largest export market in food and drink, and second largest market in clothing, fashion and footwear. Trade in other sectors continues to grow. Two way trade stands at €1 billion per week.

Ireland has a modern, business-friendly economy. The country is dependent on foreign direct investment from major high-tech manufacturers such as Intel, Google and Pfizer. As a result, Ireland is one of the world's biggest exporters of pharmaceuticals and software. From 1995 to 2007, GDP growth averaged 6 percent, which earned the country the nickname of Celtic Tiger.

However, as a result of a crash in real estate market, economic activity dropped sharply in 2008 and the country entered into a recession for the first time in more than a decade and it's struggling to recover since. The diagram below provides - Ireland GDP Growth Rate - actual values, historical data, forecast, chart, statistics, economic calendar and news.



Actual	Previous	Highest	Lowest	Dates	Unit	Frequency
2.70	-0.10	5.50	-3.50	2000 - 2014	Percent	Quarterly

The Irish economy expanded 2.7% quarter-on-quarter in the first three months of 2014, up from a revised 0.1 percent contraction in the previous period. It is the highest growth rate in five quarters, driven by exports.

On the output side, Industry (including building and construction) increased by 2.8 percent in volume terms between the first quarter of 2014 and the fourth quarter of 2013. Other services increased by 1.1 percent and Distribution, transport, software and communication increased by 0.7 percent. On the other hand, Public administration and defence decreased by 0.3% and Agriculture, forestry and fishing declined by 0.2%.

On the expenditure side, net exports made a positive contribution of € 541m in volume terms on a seasonally adjusted basis. Personal expenditure was largely unchanged, declining by 0.1%. Capital Investment, decreased by 8.1% and government expenditure also decreased by 2.1%.

Year-on-year, the economy expanded 4.1% in the first three months of 2014. Personal expenditure rose by 0.2%. Capital investment increased by 2.9% and Government expenditure by 2.6%. Net exports were €1,166m higher in the first quarter of 2014 compared with the corresponding quarter of 2013. Factor income outflows were €571m higher resulting in a 4.1% increase in GDP.

Irish GDP contracted by 2.3% in the last quarter of 2013 from the previous three months, hurt by a surge in imports and a fall in consumer spending. Initial estimates show the economy shrank by 0.3% in 2013. In the third quarter of 2013, Irish GDP advanced 1.5% over the previous quarter, the highest growth rate in two years. GNP increased by 1.6% over the same period.

Trade

There are strong trade ties between the UK and Ireland. The UK exported £19 billion in goods to Ireland in 2013.

The main exports by value included fuel and lubricants; manufactured articles; machinery; transport; food and live animals; and chemicals.

The top 10 UK export categories to Ireland in 2013 included:

- petroleum products and related materials;
- miscellaneous manufactured articles;
- gas, natural and manufactured;
- medicinal and pharmaceutical products;
- electrical machinery, appliances and electrical parts;

Exports from Scotland to Ireland exceed £500 million per annum and places Ireland in the top 10 countries which Scotland trades with as at 2013.

Irish National Recovery Plan 2011 - 2014

The Irish Government published a National Recovery Plan in November 2010. The aim of this plan was to re-calibrate the public finances and to bring its deficit in line with the EU target of 3% of economic output by 2015.

Through the measures adopted in 2011 and 2012 the Irish Government deficit decreased from 30.9% of GDP in 2010 to 7.5% of GDP in 2012. Since 2011 the unemployment rate fell from a peak of 15.1% to 11.7% in May 2014.

The number of people in employment increased (net increase) by 58,000 in the year to September 2013. In February 2014, The Irish Government launched is Action Plan for Jobs 2014, which was a follow on to previous plans in 2012 and 2013. This Action Plan is a cornerstone of the Governments' Medium Term Economic Strategy 2014 – 2020. This strategy targets full employment by 2020 and has identified a broad range of traditional sectors and sectors with emerging opportunities to facilitate the growth in job creation.

Opportunities

The Irish Government set out their Strategy for Renewable Energy: 2012 – 2020, which was seen as a key strategy for job growth and increase in GDP across the country. The strategy stated, "The development of renewable energy is central to overall energy policy in Ireland. Renewable energy reduces dependence on fossil fuels, improves security of supply, and reduces greenhouse gas emissions creating environmental benefits while delivering green jobs to the economy, thus contributing to national competitiveness and the jobs and growth agenda.

Water has long been one of Ireland's major assets, however the provision of water services in Ireland has historically been a source of frustration and a barrier to consumers, both domestic and business as well as public sector. Water has shaped the Irish landscape, governed the location of towns and cities across the country, protected the health of the Irish people and helped to develop the economy. However, clean water is expensive to produce and maintain and the funding model for Water Services up to 2013 was simply not sustainable.

Each of the country's 34 Local Authorities were in charge of the water service provision for the county area. This proved problematic, provided patchy level of service and was unsustainable. Despite the good work of the Local Authorities, much greater investment was needed on a national scale to address weaknesses in the water system, including high leakage rates, varying quality standards and disruptions to supply.

Ireland is currently the only country in the OECD that does not have a domestic charge. The creation of Irish Water in 2013 on a phased basis will ensure that Ireland is well positioned to attract foreign and indigenous investment, creating real potential for new jobs within Ireland and for export opportunities for companies based within Scotland.

Irish Water's core responsibility is to provide and develop water services throughout Ireland. Incorporated in 2013 as a semi state company under the Water Services Act 2013, Irish Water will bring the water and wastewater services of the 34 Local Authorities together under one national service provider.

Irish Water will gradually take over the responsibilities from these Local Authorities on a phased basis from January 2014. It will take approximately five years for Irish Water to be fully established, at which point it will be responsible for the operation of public water services including management

of national water assets, maintenance of the water system, investment and planning, managing capital projects and customer care and billing.

As well as responsibility for public water services, Irish Water will also be making capital and investment decisions regarding the country's water infrastructure on a national basis.

It is worth highlighting that Irish Water model their set up on Scottish Water, which is seen as the benchmark within Europe for Water utilities. Project such as WARES (www.waresnpp.eu) , which play an active role in the Scottish Government Hydro Nation Policy Agenda are seeking to ensure that relationships are developed between Scottish Water and Irish Water.

Ireland is an ideal first step market for UK companies. Benefits for Scottish businesses exporting to Ireland include strong transport links; similar regulatory and legal framework; ideal starter or test export market; sophisticated consumer market; and a good perception of the quality of Scottish goods and services.

The strengths of the Irish market include a strong bilateral trade between the two countries; astrong economic environment; the flexibility and range of Small and Medium Sized Enterprises (SMEs) representing 99.8% of active enterprises in Ireland; and a highly educated workforce.

Doing business in Ireland is very similar to doing business in Scotland. If your product or service is successful in the UK, there is a good chance it will be successful in Ireland. However, there are certain challenges when doing business in or with Ireland that companies need to be aware of. These include:

- challenging economic situation, although it has improved in the last 12 months;
- recent reduction in purchasing power of Irish families;
- turbulent consumer confidence;
- competition against a robust domestic market;
- costs of doing business can be high.

6. USA and Canada

6.1 USA Market Context

The US is the world's largest economy, accounting for approximately 25% of global GDP. The US is the UK's biggest export market, accounting, totalling over £41 billion in 2012, and increasing by over £2 billion from 2011 to 2012, despite the challenging economic environment.

The top 10 US import items from the UK are:

Machines, engines, pumps	$8.5 billion
Oil	$7.8 billion
Vehicles	$5.8 billion
Organic chemicals	$3.7 billion
Pharmaceuticals	$3.6 billion
Medical, technical, equipment	$3.3 billion
Electronic equipment	$2.7 billion
Alcoholic beverages	$1.8 billion
Collector items, art, antiques	$1.8 billlion
Aircraft, spacecraft	$1.6 billion

The US is the top destination for exports from Scotland, with over $5 billion in 2012. The breakdown of Scottish exports for 2012 was estimated as follows:

In the USA, the impact of UK investments is significant. They account for 880,000 US jobs, often in highly skilled and well compensated positions with nearly $70 billion in annual wages. US subsidiaries of UK firms owned more than $2 trillion in total US assets last year, and devoted $260.2 billion in property, plant and equipment investments in the USA in 2010. In the same year, they accounted for nearly $6 billion in research and development expenditures and increased exports to $27.8 billion.

These investments have shaped the US economic climate in such key industries as aerospace and defence, biotechnology, information technology, high-tech manufacturing, and financial services. In fact, the stock of manufacturing FDI from the UK increased to nearly 37% of all UKFDI into the country. Within manufacturing, chemicals and transportation equipment manufacturing are the leading sectors. Financial services is the dominant service sector with UK investments in the USA.

Overall, FDI is an integral part of the US economy. FDI supports nearly 5.3 million US jobs in high-value and high wage positions. Even with global economic volatility in recent months, FDI flows in the US have remained steady, with a steadily increasing upwards trend since 2008 to 2013. While the global economic slowdown has impacted overall FDI over the first part of 2014, it is reasonable to foresee an increase in FDI flows in the short to mid-term as firms gain economic, regulatory and fiscal certainty and move forward with pending investment plans.

The US should not be seen as one geographical market but a series of markets. The US is broken down into 5 main regions; NorthEast, SouthEast, MidWest, SouthWest and the West and it is important when assessing the overall USA market to analyse and research the differing characteristics of each region.

Many states have populations that are larger than European nations. California is the most populous state with over 38 million residents. The continental US (without taking into account Hawaii) covers four time zones and is approximately 3,000 miles coast to coast.

The UK continues to be the largest source of foreign direct investment (FDI) in the United States. The total UK direct investment $485 billion in 2010 to nearly $528 billion in 2011, accounting for more than 1/5 of all FDI in the USA.

Population

The population of the USA is approximately 320 million people and if forecast to increase to around 420 million by 2060. **Source: U.S. Census Bureau, Population Division**

Large swaths of rural America are struggling with shrinking populations despite an oil boom that has drawn a surge of residents into states such as North Dakota, a trend that mirrors the shift from an economy revolving around farming and manufacturing toward a greater reliance on high-level services.

New data, taken from a Census report on population trends released in April 2014, offer a snapshot of the challenges America's rural counties face as they struggle with aging populations and a stream of younger residents heading elsewhere for work.

Nearly 60% of rural counties shrank in population last year, up from 50% in 2009 and around 40% in the late 1990s. In all, almost eight in 10 of the counties that lost population over the past three years were outside of metropolitan areas, according to an analysis of Census data by William Frey, a demographer at the Brookings Institution. Over half of those counties were heavily dependent on farming, manufacturing or mining.

Rural America, which encompasses roughly three-quarters of the nation's landmass, has seen slower population growth for a decade, as more young people move to urban and suburban areas for jobs and even aging retirees seek out more-populated places to live.

The population decline from pockets of Midwestern states such as Iowa, Illinois and Kansas comes at a time of rapid expansion elsewhere on the Great Plains. North Dakota, now in the midst of an oil-drilling boom, has become the country's fastest-growing state after more than half a century of stagnation. As of last summer, six of America's 10 fastest-growing metro areas were in or near the Great Plains, including Fargo, N.D., and Odessa, Texas, the Census data shows.

By contrast, population losses are now gathering steam in areas of the industrial Midwest, including northern Pennsylvania and western New York.

Doing Business in the USA

All merchandise coming into the US must clear Customs and is subject to a Customs duty unless specifically exempted by law. The US Customs service does not require an importer to have a licence or permit, however other agencies may require a permit, licence, or other certification, depending on what is being imported.

Companies who are exporting goods into the US from the UK may want to hire a customs broker who can prepare the necessary documentation to import goods into the US. Although there is no legal requirement to hire a customs broker, it is often the most efficient way to clear customs.

Setting Up a Presence in the USA

Many companies begin, and many continue for long periods, by selling into the US market without establishing a physical presence here. Subsidiaries are formed typically to ring-fence US liabilities and to avoid creating a tax “nexus” for the overseas parent at the US federal or state levels.

Companies look to establish US subsidiaries typically when they move beyond simply selling into the country from outside, by for example:

- Employing US personnel, or sending overseas employees into the US for work purposes
- Entering into a lease or otherwise establishing a US office
- Holding a stock of goods in a US warehouse
- And/or, where there is a desire to put a US commercial “face” on the business – i.e., at the margin, Americans feel more comfortable dealing with US counterparties using US documents

US jurisdictional system is complex, with effectively 51 sovereign jurisdictions (50 states + federal). US companies are formed at the state level, and Delaware is still a default choice for many

companies locating here. The usual choice is between corporation and LLC, with a large majority still favoring the traditional “Inc.” form

Delaware corporations can be formed quickly and cheaply, but the entire formation process can be complex and involve multiple parties, so needs careful planning. Despite overall low barriers to market entry, navigating the US jurisdictional and regulatory channels can be difficult, i.e. Each state is a sovereign jurisdiction with its own set of laws and regulatory requirements, including corporation statutes. As a result, regulation (including tax filing and payment requirements) can be found at the federal, state and local levels, and all need to be taken into consideration.

It is often a much more competitive market than many companies initially estimate. It is important to set reasonable projections – Do not assume that because you speak the same language you think the same way; the need to be persistent and assertive – Americans tend to admire the “squeaky wheel” – no place for “British reserve” here; and get good advice – there is an obvious temptation to go it alone, at least initially, but an ounce of prevention is often worth a pound of cure when it comes to structuring your US operations.

6.2 Canada - Market Context

Canada has a population of 35 million and GDP in 2013 was estimated at $1.827 trillion in 2013. Canada’s economy performed better than anticipated in 2013, as the transition towards more export-led growth is developing. An accelerating U.S economy will continue to lift Canada’s exports and therefore, economic growth. GDP is expected to grow from 2.0% in 2013 to 2.3% in 2014 and 2.5% in 2015.

Low inflation remains a concern for the Bank of Canada. TD Economics estimates that the cause is a mix of temporary factors, a weak global backdrop and domestic economic slack. As the temporary factors subside, and the impact of a weaker Canadian dollar filters through to consumer process, inflation is expected to grind gradually higher, reaching 2% in late 2015.

Canada is the UK’s 16th largest export market for goods. Canada has cultural, historic, and linguistic links with the UK. The EU-Canada Comprehensive Economic and Trade Agreement (CETA) will help strengthen trade between Canada and the UK.

Around 700 UK companies are currently doing business in Canada, and the benefits of exporting to Canada are seen as:

- familiar products and service providers
- proximity to US market
- similar legal and business practices
- diverse ethnic population
- pending CETA agreement which will reduce trade restrictions

The strengths of the Canadian market include:

- strong economic growth and banking sector
- high personal wealth
- large and diverse natural resource sectors
- strong business and consumer base

The Canadian economy presents significant investment opportunities, particularly in the natural resource sector. Canada also serves as a base for entering the US market, given similarities in market conditions. Canada and the US economies are connected by the North American Free Trade Agreement (NAFTA).

Canada has free trade agreements in place with more than 10 countries. It has almost finalised CETA, an EU-Canada free trade agreement. CETA will provide opportunities for British businesses looking to access the Canadian market.

UK goods and service exports to Canada were worth £8.1 billion in 2012. UK investment in Canada is worth £157 billion, which represents an increase of over 50% in the last five years.

The oil and gas industry remains a major contributor to Canada's economy. It is the largest private investor in the country, contributing about C$18 billion taxes and royalties. Canada ranks number three in crude oil reserves. It is currently the sixth largest oil producer in the world. About 97% of Canada's resources are unconventional, located in Alberta's oil sands. Only about 16% is currently under development.

Canada currently produces about 2.6 million barrels per day. By 2025 production is expected to rise to 4.7 million barrels. To support this growth, investment estimated at C$2 trillion is required.

The New Building Canada Plan is the largest federal infrastructure plan in Canadian history. The plan includes C$ 70 billion investment for public infrastructure over the next 10 years. Public-Private Partnerships (PPP) are becoming more common, with dedicated agencies being established.

Opportunities

Areas of opportunity include:

- social services (hospitals, education, housing)
- transportation infrastructure (roads, bridges, public transit)
- water and wastewater projects

Scottish Water International are currently working under contract with the municipal authority in Calgary.

Canada has a mix of federal and provincial laws. In most of Canada, the legal systems are based on common law. In Quebec, the legal system is based on civil law.

The Canadian Standards Association (CSA) covers regulation and safety testing of consumer products. In addition to customs duties, Canada imposes a value-added tax called GST. It is levied at 5% for most Canadian provinces.

7. South East Asia

South East Asia –Market Context

The countries reviewed specifically in this section are Singapore, Thailand and Malaysia. South East Asia is undoubtedly one of the most dynamic regions in the world and growth has continued even through the recent economic difficulties. The average GDP growth of the ASEAN 10 in the last five years has ranged between 2.9% and 5.9%. There are major gaps in GDP per capita among the Southeast Asian countries – e.g. high of $50-60k for Singapore, Thailand at $8k, and Malaysia at over $16k. There are large development gaps between urban and rural areas and between the mainstream population and ethnic minorities.

7.1 Singapore

Singapore is a small, wealthy city-state with an open and trade driven economy. It is widely known as a global business hub, in a strategic geographical location. There is a stable government, strong rule of law and effective regulatory system and is ranked by the World Bank as the easiest place in the world to start, run and do business and is therefore attractive to UK businesses. Over 1,000 British companies have a presence in Singapore, and 30,000 British residents live there. It attracts a large amount of foreign direct investment as a result of its location, corruption-free environment, skilled workforce, low tax rates and advanced infrastructure.

Singapore lacks natural freshwater lakes and currently relies on four water sources to meet its water demand: 40% of water imported from Malaysia, 30% reclaimed water, 20% rainfall collected in reservoirs or water catchment areas and 10% seawater desalination. The government target for 2060 is to acquire 50% of water resource from reclaimed water, 30% from seawater desalination and 20% from rainfall collected in water catchment areas, to be self-sufficient. This presents a number of opportunities.

4.7.3 Economic snapshot (% annual growth rate)

	2011	2012	2013-16
GDP	5.2	1.3	3.5
Export of goods and services	3.5	0.3	6.5
Import of goods and services	3.6	3.2	7.4
Inflation	5.2	4.6	2.8
Short-term interest rates (%)	-	-	-
Exchange rate (per £)	-	-	-
Population	2.1	2.5	1.4
Unit labour cost	3.1	0.6	-0.1

	2011	2012	2013-16
Source: Oxford Economics			

Economic Outlook

Singapore's real GDP grew by 3.9% in 2013 and economic growth is expected to gather momentum in 2015-18 as external demand strengthens. The economy is expected to grow by 3.3 per cent this year. The figure is down from the 3.8 per cent forecast earlier in the year, after gross domestic product (GDP) growth in the second quarter was lower than expected.

Trade

Singapore's bilateral trade partners are expected to continue to be dominated by the emerging economies of Asia, in particular, India, Vietnam and China. Malaysia and Indonesia will also become increasingly more important trading partners. Singapore has strong trade links to the Middle East and North Africa and exports are expected to rise in the coming years.

In terms of the UK, Singapore accounts for half of UK exports to the South East Asia region. The top 10 exports from UK to Singapore in 2012 by value included:

- Power generating machinery and equipment.
- Other industrial machinery and parts.
- Professional and scientific instruments.
- Miscellaneous manufactured articles.

Singapore is one of the few countries with which the UK runs a trade surplus in goods. This expanded to a record £1.7 billion in 2013 despite a fall in UK exports. The UK is the third largest source of foreign direct investment (FDI) into Singapore, after the US and the Netherlands. UK investments were over £24 billion at the end of 2012.

Opportunities

Opportunities exist in several sectors including infrastructure, financial sector, creative industries, ICT, biomedical sciences and education and training.

On the infrastructure side there is a large demand for public housing developments; institutional building; civil engineering projects (including ports and rail).

In the water and wastewater sector in particular, there are a number of potential opportunities identified including:

- Equipment manufacture
- Filtering and purifying machinery and apparatus
- Wastewater recycling and treatment technologies
- Modular wastewater treatment systems
- Solar technology providers

- Green building consultancy firms
- Pollution control and resource recovery.

This sector as a whole is a key growth area for Singapore's economy. There has been over $800m invested in R&D in the environmental sectors and therefore this could be a key area where Scottish companies investing in R&D could contribute to business in Singapore.

Water sustainability and security are priorities for Singapore's socio-economic growth. Singapore is committed to transforming itself from a country dependent on water imports from Malaysia for 40% of its water resource into a self-sufficient one, especially when a major water agreement with Malaysia is due to expire in 2061.

Singapore is also positioning itself as a hub for water technology innovation in Asia and partnerships with The National University of Singapore (NUS) and the Delft in the Netherlands is a key move towards this. The group is working on research in smart sensing and engineering technologies related to the urban water cycle and this could represent further opportunity to be explored.

Meanwhile, the Nanyang Environment & Water Research Institute (NEWRI) was established by the Nanyang Technological University (NTU) in Singapore. NEWRI includes the Singapore Membrane Technology Centre and the DHI-NTU Water & Environment Research Centre, which was established in conjunction with DHI Water & Environment of Denmark. As a result, there may be significant opportunities for Scottish companies who have expertise in membrane technologies and other relatively new technology in the water sector.

Singapore, is strong in grey water reuse and this may be an area where UK companies could contribute to new technologies. Singapore and the UAE are also collaborating on a number of initiatives and sharing of technologies. This should also be investigated further in Stage 2. Rainwater harvesting is another area for further investigation where Scotland could contribute.

There are a number of key benefits to Scottish businesses exporting to Singapore, including:

- free flow of goods and capital
- current exchange rate makes UK products and services attractive
- common language and strong historical ties
- similar business and legal practices: the legal system in Singapore is very sophisticated and is based almost entirely on British common law between the 1820s and 1970s.
- similar technical standards
- close to major Asia Pacific economies and UK's largest trade partner in south east Asia
- IP protection (ranked highest in Asia)

The main challenges of doing business in Singapore include the small size of the country and small population. Other more specific challenges include:

- eight hour time difference with the UK
- can be expensive place to do business
- widening income inequality has led to some anti-foreigner sentiment
- tighter foreign worker restrictions including quotas

7.2 Malaysia

Malaysia is one of south-east Asia's most vibrant economies, thanks to decades of industrial growth and political stability. The multi-ethnic, multi-religious country encompasses a majority Muslim population in most of its states and an economically-powerful Chinese community. It has two key regions (mainland and Malaysian Borneo). Gross national income per capita is US $8,770 (World Bank, 2011). Malaysia has an abundance of natural resources in contrast to neighbouring Singapore.

4.7.8 Economic snapshot (% annual growth rate)

	2011	2012	2013-16
GDP	5.1	5.6	4.6
Export of goods and services	4.6	-0.1	3.8
Import of goods and services	6.1	4.7	4.8
Inflation	3.2	1.7	2.7
Short-term interest rates (%)	-	-	-
Exchange rate (per £)	-	-	-
Population	1.6	1.5	1.4
Unit labour cost	2.8	-0.8	0.7
Source: Oxford Economics			

Economic Outlook

The pace of growth in the first quarter of 2013 slowed to 4.1%, due to the continued contraction in the external sector and, decelerating private investment. Nonetheless, private consumption remained robust, providing the necessary support for domestic demand. It is expected that domestic demand will continue to fuel the growth of the Malaysian economy. The growth outlook for 2014 is projected to be between 5.0-5.5% as a result of weak overall world economic outlook.

Trade

There are strong ties between the UK and Malaysia, based on a historical thriving trade and investment relationship. The UK is Malaysia's largest market in Europe and Malaysia is the UK's second-largest market for goods in South-East Asia, after Singapore. Close historical and educational ties, a familiar commercial and legal framework and the widespread use of English have served to strengthen this relationship.

Malaysia's trade growth will be dominated by emerging markets, particularly in Asia. The fastest growth in exports will be to India, Vietnam, China and Indonesia. Exports to some Middle East

markets are also expected to perform strongly, led by Saudi Arabia and the UAE. Imports from Mexico, India and Vietnam are forecast to grow particularly strongly.

In 2009 UK exports (goods and services) to Malaysia were worth £1.68 billion. The value of UK services exports to Malaysia was £634 million in the same year. (UKTI).

Opportunities

Malaysia is attempting to achieve high-income status by 2020 which is offering great opportunities for UK businesses in particular for the following sector: business services, communications, education & training and construction. HSBC Global Connections – May 2013 rated Malaysia in the top 10 future growth markets for UK exports to 2030. The UK is Malaysia's largest market in Europe.

There are some key advantages for UK organisations over others and it is clear that relations will remain strong.

Malaysia is a member of the Commonwealth and Malaysian businesses and people retain great trust and affection for Britain.

It is estimated that more than 70,000 Malaysian students attend universities in the UK each year – more than in any other destination worldwide. This further strengthens potential future business links from a young age.

Malaysia's key industries are: electronics, petroleum and LPG, chemicals, textiles, palm oil, timber, and tourism. Traditionally, the UK has been one of the Malaysia's leading investors, with estimated cumulative investments of over £20 billion in the last 30 years. As Malaysia opens up its services sector to foreign firms it will create excellent opportunities for UK companies. Both the tourism and car manufacturing sector also have considerable scope for expansion. Furthermore, opportunities are expected to increase once negotiations on an EU-Malaysia Free Trade Agreement are concluded.

In the water and wastewater sector, the adoption of Green Technology in the management and usage of water resources, wastewater treatment, solid waste and sanitary landfill water/wastewater management will be a key opportunity. However, tenders are almost exclusively awarded to Malaysian companies – foreign expertise is incorporated by way of sub-contract or joint venture arrangements and so the development of partnerships with Malaysian entities will be important.

Wastewater treatment plants are emerging in Malaysia as a response to the increasing demands for better and more effective sanitation services resulting from the country's economic growth. Proper water treatment is paramount in Malaysia as around 98% of Malaysia's fresh water supply comes from surface water – requiring more sophisticated treatment to be used as potable water. Additionally, Malaysia's inhabitants are generating about 6 million tons of sewage every year, most of which is treated and released into the rivers (also used for abstraction of water).

Moreover, the domestic and industrial water demand in Malaysia is expected to triple over the next 50 years20, while its per capita water consumption is estimated to double by 2020. This is therefore a key opportunity for UK / Scottish businesses to introduce innovation, new efficient technologies etc.

The following sectors in Malaysia offer potentially significant opportunities:

- Recycling of agricultural waste and agricultural by-products, chemicals, and reconstituted wood–based panel boards or products
- Supply of wastewater treatment systems, monitoring equipment, wastewater recycling equipment, sludge dryers and industrial purification systems.
- Supply of municipal sewerage treatment plant and equipment to Indah Water Consortium and developers that IWK contracts with. Demand by IWK is for new sewerage treatment parts such as pumps, aerators, mixers, filters, screens and water monitoring equipment.
- Waste minimization technologies, hazardous waste recycling and disposal (toxic metal and low radioactive sludge, medical waste) and bioremediation technologies.
- Oil reclamation technology to recover used oil from industries and ship-based sludge. In air quality, vehicle emission monitoring equipment, industrial air scrubbers, stack emission analyzers and control equipment, dust collectors, indoor air pollution
- control systems and air monitoring equipment on power generation stations and
- boiler plants.
- Environmental auditing, management systems and impact assessments.
- Risk analysis, a new requirement for environmental impact assessment associated with petroleum and chemical industries.

Privatisation of solid waste management should provide opportunities to supply leading-edge technologies, equipment and landfill services. Opportunities also exist for small and medium-sized municipal waste incinerators, waste recycling and composting, landfill design and landfill leachate treatment services.

Malaysia is also opening up its service sector to foreign firms, and UK companies would stand to benefit, thanks to their good expertise and reputation in the sector. The main business challenges in Malaysia are mainly political uncertainty and the wider global downturn.

7.3 Thailand

Within ASEAN, Thailand's economy is in the top three in terms of size and volume of international trade. It is therefore well positioned as the region moves towards economic integration and a single free-trade area in 2015. Thailand has an export-led economy, but tourism is also a major industry.

4.7.13 Economic snapshot (% annual growth rate)

	2011	2012	2013-16
GDP	0.1	6.5	4.5
Export of goods and services	9.5	3.1	6.1
Import of goods and services	13.7	6.2	6.3
Inflation	3.8	3	2.4

	2011	2012	2013-16
Short-term interest rates (%)	3.3	2.9	3.7
Exchange rate (per £)	51.6	48.7	52.05
Population	0.6	0.5	0.5
Unit labour cost	3.0	1.8	-0.3
Source: Oxford Economics			

Economic outlook

As China continues to rebalance the economy away from a reliance on credit it is inevitable that growth in countries, such as Thailand, that have come to rely heavily on trade with China will be affected. After the rebound in 2012, economic growth is expected to moderate to about 5% in 2014 and 2015, the same pace as seen in the 3 years leading up to the global financial crisis.

Trade

The main destinations for Thailand's exports are the rest of Asia and the US. Although traditionally Thailand's major markets have been North America, Japan and Europe, economic recovery witnessed by Thailand's regional trading partners also helped boost growth in Thailand's exports. The country has also increased its exports in some of its non-traditional export markets, including India, China and the Middle East. To help increase the value of its exports, Thailand has negotiated free trade agreements with Australia, China, India, Japan, New Zealand and ASEAN.

Opportunities

There are a wide range of business opportunities for Scottish companies in Thailand. In particular, the country's economic growth has created openings for firms in a number of infrastructure sectors, including electrical power, telecommunications and renewable energy. Key strengths of the Thai market for Scottish companies include:

- Hub of South-East Asia, gateway to Indochina and Southern China.
- Improved and modernised transportation facilities.
- Well-developed infrastructure and upgraded IT and communication systems.
- State-of-the-art industrial estates.
- Thailand ranked nineteenth out of 183 nations by the World Bank's Ease of Doing Business survey in 2011.
- Low-cost skilled workers and labour.
- Government efforts to make Thailand a foreign-investor-friendly market, for example by tackling bribery and corruption, and simplifying import regulations.
- Wealth of experienced international legal advisers and business consultants.

The following sectors offer significant commercial opportunities for Scottish companies and reflect Thailand's priorities and the capability in Scotland and the UK:

- Advanced engineering
- Agriculture
- Education and training
- Environment
- Power
- Healthcare, medical devices and pharmaceuticals (Thailand is aimingto be Asia's medical hub)
- Petrochemicals
- Renewable energy

The upturn in the industrial sector has driven up the demand for Water and wastewater treatment (WWWT) facilities in Thailand. Advanced WWWT technology will find considerable business opportunities in high-growth industries such as automotive, electronic and electrical, paper and pulp, as well as steel.

Further, heightened environment consciousness and the need to develop a global standard for environment protection are making a solid case for the WWWT market. UK supply chain products such as flow-control valves and water treatment technologies are also in demand. The key risks to operation in Thailand are corruption and lack of skilled labour.

Appendix 3 – Water and Wastewater Conferences and Exhibitions

Conferences, trade shows and exhibitions are an important resource for companies with a desire to expand in the international market place. This section provides a brief summary of key events in the market areas identified as priority markets, and some have already been referenced in the body of the report.

In developing markets particularly, it remains important to fully research potential partners and market opportunities and a combination of these events will provide a good platform for this, dependent on the export market and subsector of interest. There are numerous relevant trade shows and exhibitions covering the broad spectrum of interest of the Scottish water and wastewater sectors.

Alongside SDI, UKTI are able to provide grant support to businesses attending certain shows, particularly in emerging and high growth markets, such as Thailand, Malaysia, Singapore and India. Their website contains a list of areas where they are willing to offer support: https://www.gov.uk/tradeshow-access-programme and it is expected a more detailed list for 2015 will become available in the near future. It is worth noting that both SDI and UKTI also provide advice and support on developing international exhibition skills.

Name of Exhibition / Conference	Place	Date	Contact Info	About
1.International Water Summit, British Water 2015	Abu Dhabi, UAE	19-22 January 2015	http://iwsabudhabi.com/ lila.thompson@britishwater.co.uk	The International Water Summit (IWS) is a unique global platform for promoting water sustainability in arid regions. IWS brings together world leaders, field experts, academia luminaries and business innovators to accelerate the development of new sustainable strategies and technologies. Although not a particular area of study for this project, the conference has been included as it has relevance to other areas that may be of interest to companies planning to export internationally. IWS 2015 is endorsed by the UAE Ministry of Environment and Water, Abu Dhabi Water & Electricity Authority, the Environment Agency of Abu Dhabi, the Regulation and Supervision Bureau, and Abu Dhabi Sewerage Services Company.

2. Americana, 2015	Montreal, Canada	17 – 19 March 2015	http://www.americana.org/en	The program of Americana will present high-calibre international science and technology presentations dealing with current and major environmental issues for industrialized countries and the developing world. The presentations will focus on economic and environmental solutions, proven or unknown technological innovations as well as reinvented management approaches in line with the themes listed below and in the context of the following issues, with the final conference schedule to be confirmed: • Climate change adaptation • Ecodesign • Sustainable use of resources • Clean technologies • Environmental emergency response • Environmental management in remote regions • Market development and business opportunities • Regulations and legal frameworks
3. Asia Water 2016	Kuala Lumpur, Malaysia	6 – 8 April 2016	http://www.asiawater.org/ Email: asiawater@ubm.com	The exhibition features the must cutting edge products, new trends and leading technologies from around the world, and is a good forum to display latest innovations or products, expand networking opportunities and seek new partnerships.
4. Wod-Kan 2015	Bydgoszcz, Poland	26-28 May 2015	http://igwp.org.pl/english http://igwp.org.pl/application-forms	WOD-KAN 2015, is the 23rd International Fair of devices and equipment for Water Supply and Sewage Systems, to be held on 26-28 May in Bydgoszcz. Companies from Poland and all over Europe will display their products, and the Fair will be accompanied by numerous presentations, and the annual conference of Izba Gospodarcza Wodociągi Polskie (IGWP). Provides a

				good opportunity to see all the latest products of the water supply and sewage technology leaders, gathered in a single place. Participation in the Fair is a good introduction to the market, and to maintain existing and establish new business relationships, and where prospective export manufacturers can receive valuable feedback on their products. A range of key areas are covered including: • Water treatment systems and equipment • Water and sewage treatment technologie • Sewage treatment plants • Measuring instruments for water treatment plants and sewage treatment plants • Measurement, control and analysis techniques • Water and sewage metres • Machinery and equipment used for construction, repair and maintenance of water supply and sewage systems; hydraulic power units, pumps and plumbing fittings • Regeneration of water supply and sewage systems and deep wells • Modern technologies of water supply and sewage systems renovation • Pipes, pipe fittings and wells used for construction of water supply and sewage systems • Software for economic and technical infrastructure management in water supply and sewage systems companies • Design, technology and equipment for swimming pools • Training, publishing and consulting activities

5.3rd International Water Week Amsterdam 2015	Amsterdam, Netherlands	2 - 6 November 2015	www.internationalwaterweek.com Amsterdam RAI, International Water Association (IWA), International Water Conferences (IWC), Netherlands Water Partnership (NWP)	The International Water Week Amsterdam (IWWA) is one of the premier events for the industry. The formula launched in 2011, incorporates various events alongside the world renowned Aquatech trade exhibition, and is established as one of the top international water market events. The IWWA Conference is becoming an important platform, mainly because the IWWA Conference is different, given its focus on integrated solutions, and the event makes the connection between suppliers and scientists, between water, energy and food, water technology, water management, civil engineering, finance and more. The theme of the last edition was 'Integrated water solutions for a green economy', focusing on urban water technology and management. The event is co-located with Aquatech Amsterdam 2015, the world's leading trade exhibition for process, drinking and wastewater.
6.CIWEM Annual Conference, 2015	Royal Geographical Society, London	15 & 16 April 2015	http://www.ciwem.org/events/annual-conference.aspx http://www.ciwem.org/events/annual-conference.aspx	A range of presentations and discussions on the challenges associated with delivering sustainable water and environmental management, with plenty of networking opportunities. Over 200 water and environment professionals gather each spring at CIWEM's Annual Conference to network, share knowledge and discuss today's most pressing environmental issues. Presentations across the two days cover topics such as: Climate Change - Flood Risk Management - Nature Driven Design - SUDS - Future Proofing – Circular Economy - Fracking & Wastewater Treatment - Sewage as a Resource - Catchment Management Target Audience: Regulators - Decision Makers - Practitioners - Environmental Consultants - Land Owners - Local Authorities - Environmental NGOs - Water Professionals.

7.Advanced Membrane Technology VI: Water, Energy, and New Frontiers	Sicily, Italy	8 – 13 February 2015	http://www.engconf.org/conferences/materials-science-including-nanotechnology/advanced-membrane-technology/ Conference Chairs - Dibakar Bhattacharyya (University of Kentucky) DB@uky.edu, Benny Freeman (University of Texas) Freeman@che.utexas.edu	Membrane technology is an important part of the separation technology. Its usage in the chemical industry is growing due to its versatility and low-energy consumption. The 2015 conference will showcase the recent advancements of membrane research, development and applications related to water production, wastewater reclamation, gas and liquid separations and purifications, energy issues, the environment, special needs, etc. This ECI membrane conference will also address new frontiers of membranes, such as biomimetic membranes, graphene membranes, CNT membranes, membranes for power generation, etc. It provides a forum for exchange of ideas and thoughts, and discussions for the global membrane community, and provides an opportunity to build important professional networks. Technical Sessions include: Membranes for CO_2 capture and energy-related gas separations Membrane desalination and water reuse for high TDS systems (fracking water to power plant and other oil/gas water applications) High recovery membrane systems to challenging separations Advancements in nanocomposite, functionalized, and responsive membranes Biomimetic, CNT, and graphene-based membrane advances and applications Reduced fouling membrane advances for UF to NF to RO MBR advances and full-scale applications Poster session on Membrane Advances and applications Plenary Session (Invited Speakers)

8.FILTECH 2015	Cologne, Germany	24-26 February 2015	http://www.filtech.de/ jens@filtech.de +49 (0)2132 935760	FILTECH is the largest and most important filtration event world-wide. This Exhibition is important for all those concerned with designing, improving, purchasing, selling or researching filtration and separation equipment and services. FILTECH is the international platform and solution provider for all industries covering every market segment. In 2013 more than 30% of all foreign guests came from overseas - in total 80 nations were represented.
9.Terratech, Sustainable Solutions for the Environment	Leipzig, Germany	27 – 29 January 2015	http://www.terratec-leipzig.com/?language=en info (at) terratec-leipzig.de Visitor hotline: +49 341 678-89 90	As industry hub between Western and Eastern Europe, the TerraTec offers an ideal platform for tapping international business opportunities. The TerraTec and Enertec traditionally focus on the perspectives of the European markets, in particular Eastern and South Eastern Europe. Due to its favourable geographic location, it has been helping vendors to access the markets of Central, Eastern and South Eastern Europe and the CIS for many years. The TerraTec is the only international trade fair in Germany focusing on all aspects of environmental technologies and services in 2015. It concentrates on forward-looking solutions for water, raw materials and closed loop recycling management and relevant aspects for adapting to climate changes. Particular attention is placed on effectiveness and resource and energy efficiency.
10.Water Sewerage and Waste Exhibition	Polmont, Falkirk	4 June 2015	http://www.pse.co.uk/ Contact information: Water, Sewerage & Waste Exhibitions, 6th Floor, Davis House, 2 Robert Street, Croydon, CR0 1QQ. Tel: 0208 253 8600	Hosts multiple shows each year, strategically placed around the UK and Ireland. Attracts key specifiers to the exhibitions, and covers the whole water and wastewater industry. Other UK venues and dates for 2015 available through weblink.

11. WaterEx World Expo, 2015	Mumbai, India	28 – 31 January, 2015	http://www.chemtech-online.com/events/waterex/ For Enquiries regarding Exhibition and Sales & Marketing write to: Email: sales@jasubhai.com. For Enquiries regarding Conferences write to: Email: conferences@jasubhai.com	The Chemtech WaterEx International exhibition was conceived in 2009 as a platform to discuss the various aspects of this integral industry. India, with its population of 1.1 billion, has rapidly growing requirements for purified water. The Indian water sector, which comprises of the Drinking water segment and the Wastewater Treatment segment, is growing at a rate of 15% -20% per year. This event is a good opportunity to develop relations with Indian partners and also showcase products on the international stage.
12. 3W Expo 2015, an International Exhibition on Water Treatment, Wastewater Treatment and Waste Treatment Technologies and Management	Bangkok, Thailand	29-31 January 2015	http://www.3w-expo.com/	3W Expo 2015 is the 2nd edition of International Exhibition on Water, Wastewater and Waste Treatment Technologies and Management. This exhibition is divided into 10 Sub-Exhibitions together: Water and Wastewater Expo 2015 Membrane Tech Expo 2015 Desalination Expo 2015 Biogas Tech Expo 2015 Pumps and Flow Control Expo 2015 Drinking Water Expo 2015 City Waste Expo 2015 Haz Waste Expo 2015 Stormwater Expo 2015 Trenchless Tech Expo 2015 A variety of specialist conferences are also included in the programme.
13.Today's Water, India International Exhibition and Conference on Water and Wastewater Management	Chennai, India	26-28 Feb 2015	http://waterexpo.biz/ Phone: +91 (0)44/4291-6900 Fax: +91 (0)44/4214-7898	Showcases the latest trends and innovations in the following sectors: Chemicals / biochemicals, computers and software, corrosion control, disinfection, filtration equipment, industrial water / wastewater treatment, lab, sampling and analytical, meters and meter reading equipment, miscellaneous, monitoring and process control equipment, pipes, fittings, pumps, drives, safety equipment, sampling and analysing equipment, sludge treatment, storm water drains, tanks, valves, reverse osmosis, process water, drinking water and irrigation. Also the Watman 2015 Conference accompanies it.

14. Everything About Water Expo 2015 India	Bombay Exhibition Centre, Mumbai,	21-23 May 2015	http://www.eawater.com/expo/	Leading water exhibition and conference covering all the water and wastewater sectors, with over 450 exhibitors and 3 day conference.
15.Engineering Expo, India	Ahmedabad, India	13 – 16 March 2015 (venue TBC)	http://exhibitionshowcase.com/index/featureevents/id/845/cid/58#sthash.AZdaV6q0.dpuf engexpo@network18publishing.com, +91-22-4348 4400, 99200 22212	Engineering Expo provides an opportunity for Indian & Foreign companies to exhibit their products and services, interact with buyers and sellers and develop new partnerships. Engineering Expo, will be spread across 1,00,000 sq ft, with 400 + participants and an estimated 65,000 footfalls including a variety of engineers, technocrats, manufactures, traders, government officials and corporate.
16.International Water Technology Conference	Sharm El Sheikh, Egypt	12 – 14 March 2015	http://iwtc.info/	The International Water Technology Conference (IWTC) brings together Experts, Researchers, Equipment Manufacturers and Consultants, in order to discuss the latest state of the art in the field of water and waste-water technologies. The Conference aims at collecting all the multidisciplinary expertise that converges into the assessment, management and control of human-hydrological systems. The International Water Technology Conference (IWTC) offers a broad range of topics, covering different phases of the water cycle and the related knowledge, and wants to stimulate the interaction between experts having different backgrounds, including service providers and stakeholders. Due to the high impact of our activities on general water security concerns, attention will be given to water policies, regulations and emerging water security issues. The event is also a good trade opportunity, since most participants will be potential users and providers of equipment and services. As in the past issues of IWTC, the exhibition will offer a great opportunity to showcase activities and trends in the field of water industry.

17.THAI WATER, International Exhibition for Water and Wastewater Technology and Flood Management	Bangkok, Thailand	3-6 June 2015	http://www.thai-water.com/en-us/home.aspx UBM Asia (Thailand) Co. Ltd., 503/23 K.S.L. Tower, 14/Fl, Sri Ayuthaya Road,,Phyathai, Rajathewee Bangkok 10400, Thailand Phone: +66 (0)2/642-6911 Fax: +66 (0)2/642-6919	Thai Water 2015 Expo will provide the latest working solutions in water and wastewater technology. With the ASEAN region now one of the fastest growing in the world, the need for this technology is at an all-time high and Thai Water 2015 provides a good opportunity to hear about what is happening in the marketplace.
18.International Conference on Urban Drainage	Zurich, Switzerland	29-30 July 2015	https://www.waset.org/conference/2015/07/zurich/ICUD	More applicable for companies who operate in the consultancy field. The **ICUD 2015: XIII International Conference on Urban Drainage** aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of Urban Drainage. It also provides the premier interdisciplinary and multidisciplinary forum for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns, practical challenges encountered and the solutions adopted in the field of Urban Drainage.
19.The European Wastewater Management Conference & exhibition	Manchester, UK	12-13 October 2015	http://www.ewwmconference.com/	Key themes of the 2014 conference were: • Removal of Phosphorus and Priority Substances • Energy Efficiency and Recovery • Process Monitoring • Innovative treatment technologies • Preliminary & Primary Treatment The call for papers for the 2015 Conference will be in February 2015.

24.**International Water, Wastewater and Environmental Monitoring (WWEM) Conference**	Telford, England, UK	2-3 Nov 2016	www.wwem.uk.com/	WWEM is focused on measurement, testing and analysis for the water and wastewater and environmental industry. From test kits to process measurement, laboratory analysis right through to fixed and portable gas detection, if your work involves Monitoring, testing or working with water you need to be at WWEM. November 2014 will be the sixth time this dedicated biennial event will be held. WWEM has evolved into a very successful event since its inception back in June 2005. The event has firmly established itself as the number one event for Water/Wastewater and Environmental Monitoring professionals to attend. Visitors will attend from a large range of industries which will include Utilities, Power, Petrochemical, Food & Beverage, Pharmaceutical, Test labs, Pulp & Paper, in other words anyone who needs to test or analyse water.
25.World Water Tech Investment Summit	London	10 -12 March 2015	http://www.sbwwi.co.uk/world-water-tech-investment-summit-2015-10-12-march-2015	The **World Water-Tech Investment Summit**, now in its 4th year, is Europe's biggest event dedicated to innovation in water. The goal is to pool ideas and experiences from around the globe to accelerate the adoption of advanced technologies by both municipal and industrial water users. This year, the summit will be the centre-piece of the newly-launched **London Water-Tech Week.**

Finally, the following event may be of interest to companies interested in the India market specifically:

- Accessing infrastructure and built environment projects in India, UK India Business Council, **12 February 2015,** London

Appendix 4 – What can SE/SDI offer?

SCOTTISH DEVELOPMENT INTERNATIONAL

What can Scottish Enterprise / SDI offer?

Scottish Enterprise/SDI in partnership with Highlands and Islands Enterprise, UK Trade and Investment, Globalscot, Talent Scotland, Scotland Europa and the Enterprise Europe Network can deliver a range of international support including:
Promote the capability of Scottish companies through SDI's 29 overseas offices and international networks such as UK Trade and Investment and Globalscot.

- Market awareness events.
- Preparing to export programmes.
- Support for specific technical issues e.g. documentation, delivery, certification, finance, customs, specific markets, products and codes, supply chain logistics.
- Market entry research and assistance; for example international strategy development, market information and identifying potential partners/ distributors.
- Subject to eligibility, possible financial contribution towards the cost of market visits.
- SDI led missions, exhibitions and learning journeys to overseas markets.

Further information on the services provided by SDI can be found on Scottish Enterprise's website: **http://www.scottish-enterprise.com/services/do-business-outside-scotland.**

If you would like to find out more about export opportunities in low carbon heat, please contact your Scottish Enterprise Account Manager or Business Gateway Advisor. Alternatively contact us on enquiries@scotent.co.uk or call our helpline on 0845 607 8787.