



## USAID MONITORING, EVALUATION, AND LEARNING ACTIVITY

### ASSESSMENT REPORT: STREET NAMING AND BUILDING NUMBERING (SNBN) INITIATIVE

February 10, 2021

DISCLAIMER: This report is made possible by the support of the American people through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of The Kaizen Company, LLC and do not necessarily reflect the views of USAID or the United States Government.

## ABSTRACT

USAID, through its Cities Implementing Transparent, Innovative, and Effective Solutions (CITIES) Project, has partnered with the Government of Jordan (GoJ) and Jordanian municipalities to support a street naming and building numbering (SNBN) initiative. The GoJ has expressed interest in expanding SNBN across the Kingdom and USAID prepared a notional project plan and estimated budget for implementing SNBN in the remaining municipalities. The report's purpose is to assess the project's potential economic and governance benefits.

The Assessment occurred between August and December 2020 and the team included a Team Leader, an Assessment Specialist, and two Researchers. Data collection involved a mixed methods approach using qualitative and quantitative data from primary and secondary sources.

The Assessment found that nationwide SNBN will result in significant, positive economic and governance impacts.

SNBN supports many development goals prioritized by USAID/Jordan's CDCS 2020-25, such as inclusive private sector-led growth and strengthened ability to improve water security. For economic impacts, SNBN expansion will facilitate the physical and digital connections to commercial markets on which modern economies depend; it will also facilitate compliance with anti-money laundering banking regulations. For governance impact, SNBN expansion will strengthen municipal finances through better tax administration support; more responsive emergency and crisis response services; and enable more efficient and effective public utility management. Taken together, nationwide SNBN expansion will save (over the analysis period) millions of cubic meters of water, millions of Jordanian Dinars, and hundreds of lives – creating a compelling case for moving forward.

# EXECUTIVE SUMMARY

## INTRODUCTION

USAID, through its Cities Implementing Transparent, Innovative, and Effective Solutions (CITIES) Project, has partnered with the Government of Jordan (GoJ) and Jordanian municipalities to support a street naming and building numbering (SNBN) initiative. The initiative includes developing maps of street names and building numbers for all 100 of Jordan's municipalities and installing street signs and building numbers in nine municipalities. The GoJ has expressed interest in expanding SNBN across the Kingdom. USAID prepared a notional project plan and estimated budget for implementing SNBN in the 91 remaining municipalities to achieve this nationwide coverage. The purpose of this report is to assess the potential economic and governance benefits of such a project. Specifically, this report seeks to address the following questions and objectives.

1. What are the Jordanian and international comparative experiences of implementing systematic SNBN, and to what extent can SNBN contribute to sustainable Gross Domestic Product (GDP) growth in Jordan?
2. What are the specific and quantifiable economic and financial benefits and costs to implementation of SNBN nationwide in Jordan?
3. Compare the benefits and costs, and produce the economic internal rate of return (EIRR) and economic net present value (ENPV) calculations associated with the scaling up of SNBN nationwide, based on the initial estimates prepared by USAID, including maintenance and repair costs.

Between August and December 2020, the Assessment team conducted a desk review, data collection, analytical modeling, and finalized the report. The general conclusion is that nationwide SNBN expansion has significant potential to grow the economy and improve delivery of certain public services. It can also increase public utilities operational efficiency.

## METHODOLOGY

The Assessment team followed a mixed methods approach using qualitative and quantitative data from primary and secondary sources. Quantitative data included CITIES project data, a survey of over 60 stakeholders, and published reports. Qualitative data included interviews with more than 110 key informants and a literature review.

The team built a cost-benefit analysis (CBA) model which measures potential SNBN expansion benefits and compares those benefits with the associated costs to calculate the project's EIRR and ENPV. SNBN affects a vast number of activities, the scale of which is impractical to measure. As such, the Assessment team composed a sample of benefits – including financial, commercial, utility, and emergency services – which is feasible to measure, representative of the broader range, and aligned with USAID/Jordan's current (i.e., CDCS 2020-25) priorities – particularly of more inclusive, private sector-led growth; strengthened water security; strengthened equitable, democratic governance; and improved community health outcomes. The team also developed (in collaboration with CITIES) a cost model for the expansion of SNBN nationwide over a five-year period followed by its management and maintenance (including comprehensive replacement of obsolete signage) over a 20-year period.

The team also conducted a multi-criteria analysis (MCA) to consider potential SNBN expansion benefits which are challenging to measure. The MCA acts as a complementary tool to the CBA, providing insight into immeasurable benefits resulting from SNBN. Its benefits, which include those measured in the CBA, are categorized into four distinct service groups – government, utility, commercial services, and individual travel – as well as the stand alone benefit of financial services. These benefits are measure and analyzed across four evaluation impact criteria – civic, economic, governance, and environment impacts – which were influenced by and loosely align with the “Jordan

2025: A National Vision and Strategy” desired outcomes, as well as Jordan’s Ministry of Local Administration’s (MoLA) SNBN strategy document goals. The analysis is depicted in two matrices that measure both overall impact by benefit as well as overall estimated impact by criterion.

## BACKGROUND

SNBN is an important function which combines a comprehensive, accurate address database of all properties in a jurisdiction with clear signage and enables actions for government (e.g., tax administration), private sector (e.g., customer service), and individuals (e.g., locating services). Jordan introduced SNBN to the Greater Amman Municipality (GAM) in 2007 as well as parts of Aqaba and Irbid more recently. The Ministry of Local Administration (MOLA) requested that, through CITIES, USAID support the implementation of SNBN in nine municipalities as an initial step toward MOLA’s vision of creating accurate maps and implementing SNBN nationwide. MOLA’s purpose for undertaking SNBN includes enabling economic development, improving service delivery, enhancing the automation of government operations, and making visible improvements to local communities, which is consistent with purposes of other countries that have implemented SNBN.

Recognizing the potential of nationwide SNBN, USAID/Jordan is developing SNBN maps for all of Jordan’s 100 municipalities and implementing SNBN in nine municipalities. USAID support includes preparation and quality control of maps, procurement, community outreach, and targeted installation.

## FINDINGS

### International Experience

SNBN enables countries to pursue a range of improvements once systematic addresses are available locally. In developing countries, the most common SNBN-enabled initiative is the reform of local tax administration. This is emerging as a promising potential application of SNBN for Jordan. In developed countries (e.g., Australia, Denmark, UK), a number of economic growth opportunities based on unified, accurate, and accessible national address databases become feasible once nationwide SNBN is in place. Jordanian stakeholders recognize and look forward to opportunities of applying SNBN to economic development in this way. Such international comparisons offer both strong encouragement and helpful direction as Jordan moves forward with SNBN.

### Tax Administration

Nationwide SNBN will enable municipalities to strengthen their finances by improving the collection of Property Tax and other fees – following patterns observed in other developing countries and practices already applied in Jordan itself. Property Tax is the primary source of municipal own-source revenue – accounting for JD139 M (\$196 M) or 76% of the JD182 M (\$257 M) collected by municipalities in 2019.

When someone purchases property, municipalities register the new owner as the taxpayer, assess the property to determine the tax, and expect the taxpayer to pay the tax annually. Traditional compliance and enforcement, however, tend to be weak. This leads to low rates of payment, widening gaps in municipal finances, and dependency on central government transfers. SNBN enables municipalities to take an innovative, active approach to collections by delivering collection notices personally to taxpayer homes and workplaces which has already dramatically improved collections in GAM. Nationwide SNBN could enable other municipalities to take this approach and generate an additional JD6.3 M (\$8.9 M) in annual revenue.

### Emergency Services

The assessment finds that nationwide SNBN would help save dozens of lives and millions of JDs in property damage annually due to faster emergency response.

**Medical.** Shorter emergency response time is strongly linked with better patient health outcomes. In 2019, Jordan had more than 365,000 emergency calls and over 7,200 associated fatalities. The Civil Defense Directorate (CDD) estimates that SNBN could by itself improve response times in expansion areas by an additional 8-10%. This improvement – combined with the estimated change in outcome per minute of faster response – could save almost 30 additional lives and improve health outcomes for hundreds each year.

**Fire.** Faster emergency response is also crucial for firefighting since more property can be saved the sooner firefighting can begin. Jordan incurs approximately JD35 M (\$49 M) of fire damage each year. The response time improvement described above – combined with estimated property recovery per minute of faster response – could save JD1.2 M (\$1.7 M) annually.

### **Crisis Response (COVID-19)**

The assessment finds that SNBN can be instrumental for efficient, effective crisis response, especially local planning, local service delivery, and individual outreach. During the COVID-19 pandemic GoJ entities – particularly municipalities – have undertaken an unprecedented campaign to combat transmission, including safe control of movement, enhanced neighborhood sanitization, and personal delivery of essentials to the most vulnerable. These experiences have revealed the tremendous value when managing crises of the ubiquitous street signage, comprehensive address databases, and accurate Geographic Information System (GIS) maps which SNBN provides.

*Local planning.* SNBN can help designers of geographic restrictions balance safety with access to vital resources. For example, MOLA Acting Secretary General Osama Al Azzam emphasized that municipalities discovered during the first wave COVID-19 transmission that there is a need for detailed maps linked to GIS to create a “smart lockdown” by defining precisely areas targeted for isolation, placing neighborhood entry/exit checkpoints effectively, and determining access within walking distance to essential services – such as bakeries, pharmacies, and sources of water (i.e., tankers in case a household exhausts its allotment of non-potable water, filling stations for potable water). Similarly, municipalities required population maps linked to street addresses to determine how many new home-based businesses must be licensed to fill gaps in essential service. Finally, community organizations required the same maps to allocate their volunteers appropriately across neighborhoods to deliver services.

*Local service delivery.* SNBN allows emergency response teams to reach more citizens faster by optimizing routes through local areas. For example, Jerash leveraged its SNBN to manage increased waste collection efficiently by determining through detailed housing density maps the optimal allocation of bins and frequency of collection. Jerash followed a similar approach to locate schools more quickly and easily when distributing personal protective equipment to students taking high school examinations (“Tawjihi”). Irbid and Ajloun took advantage of their SNBN and used detailed neighborhood maps to increase the efficiency of their sanitization campaigns.

### **Financial Services**

The expansion of SNBN throughout the Kingdom would enable the creation of more bank accounts in compliance with national security requirements. The Central Bank of Jordan’s (CBJ) “Anti-Money Laundering and Terrorism Financing” Instruction Number 14/2018 requires banks to obtain the exact street address of individual and commercial applicants for most banking and credit products. In GAM, which has comprehensive SNBN, banks stringently enforce this requirement. By contrast, in areas without consistent SNBN, banks uniformly accept “next best” alternatives (e.g., electrical utility bill, residential lease). Such “workarounds” have the benefit of *approximating* compliance while still serving a large customer segment but expose both the banks and Jordan itself to security risk since alternative documents provide imprecise location information. In limited cases, these workarounds may also create barriers to financial services for customers who either do not have or cannot easily furnish alternative documents. For example, tenants of apartments which have been



built without permits (to avoid higher Property Tax assessments) often have informal, undocumented lease agreements with their landlords. Nationwide SNBN would overcome these challenges by allowing all customers and banks to comply with this Instruction fully and efficiently.

## Commercial Services

The assessment finds that nationwide SNBN will stimulate internet and delivery service expansion throughout Jordan by reducing costs and improving conditions for service providers.

**Internet.** Nationwide SNBN could enable 5-10% service expansion while reducing costs, thereby increasing access to e-commerce, e-government, and e-education services.

**Delivery.** Nationwide SNBN would stimulate supply of and demand for delivery services. All providers currently struggle to deliver packages without an accurate shipping address and would be able with nationwide SNBN to lower cost by JD1.7 M (\$2.4 M) annually, raise quality, and extend coverage.

## Utility Services

The assessment finds that SNBN expansion will enable Jordan's utility concessionaires to preserve natural resources and lower costs by reducing losses of water and electricity while facilitating customer billing and network maintenance.

**Water.** SNBN could enable up to 20% faster response to physical losses – saving up to 280,000 cubic meters of water and JD0.8 M (\$1.1 M) annually. Jordan's status as a water-scarce country means all water-saving measures have an exponential impact on an essential resource and help address a constraint to economic growth identified by the USAID/Jordan "Inclusive Growth Diagnostic."

**Electricity.** SNBN helps reduce the losses and cost of electrical utilities. Nationwide SNBN will facilitate monthly meter reading and billing, expedite connections for new customers and service interruption response for existing customers, and reduce distribution losses through more rapid, accurate detection – creating benefits of JD0.5 M (\$0.7 M) each year.

## IMPACT ESTIMATE

In every scenario, the CBA produces an EIRR above donor industry standard minimums of 10-12% and a positive ENPV which creates economic value for Jordan. The MCA reveals that significant immeasurable benefits complement the measurable benefits quantified by the CBA, namely moderate additional impact on the economy, governance, and civic spirit as well as modest impact on the environment.

## LIMITATIONS AND CONSIDERATIONS

Four factors limit the assessment's comprehensiveness and accuracy. First, it focuses only on seven measurable benefits to balance robust conclusions with efficiency. Second, it estimates benefits by triangulating more certain data with less certain assumptions based on expert interviews and published studies. Third, it assumes for many benefits that the GoJ and other organizations will use GIS consistently. Fourth, assessing SNBN impact is always uncertain because of four characteristics – it is foundational, intangible, latent, and interdependent. Nevertheless, the Assessment demonstrates beyond reasonable doubt that SNBN expansion is justified.

## CONCLUSIONS

Nationwide SNBN will result in significant, positive economic and governance impacts for Jordan. SNBN supports many development goals prioritized by USAID/Jordan's CDCS 2020-25, such as inclusive private sector-led growth and strengthened ability to improve water security. For economic impact, SNBN expansion will facilitate the physical and digital connections to commercial markets on which modern economies depend. It will also facilitate compliance with anti-money laundering

banking regulations. For governance impact, SNBN expansion will strengthen municipal finances through better tax administration; support more responsive emergency and crisis response services; and enable more efficient and effective public utility management. Taken together, the expansion of SNBN throughout Jordan will save (over the analysis period) millions of cubic meters of water, millions of Jordanian Dinars, and hundreds of lives – creating a compelling case for moving forward.



**USAID**  
من الشعب الأمريكي



## مشروع المتابعة والتقييم والتعلم

### تقييم مبادرة تسمية الشوارع وترقيم المباني (SNBN) الملخص التنفيذي

إخلاء المسؤولية: تم إعداد هذا التقرير بدعم من الشعب الأمريكي من خلال الوكالة الأمريكية للتنمية الدولية. محتويات هذا التقرير هي مسؤولية شركة كايزن وحدها ولا تعكس بالضرورة آراء الوكالة الأمريكية للتنمية الدولية أو حكومة الولايات المتحدة الأمريكية.



## المقدمة

عقدت الوكالة الأميركية للتنمية الدولية (USAID)، من خلال برنامج "دعم اللامركزية والحكم المحلي (USAID-CITIES)"، شراكة مع الحكومة الأردنية ومع البلديات الأردنية لدعم مبادرة تسمية الشوارع وترقيم المباني (SNBN). وتشمل هذه المبادرة تطوير خرائط تحتوي على أسماء الشوارع وأرقام المباني في جميع البلديات البالغ عددها 100 بلدية وتركيب لافتات بأسماء الشوارع وأرقام المباني في تسع بلديات. وقد عبرت الحكومة الأردنية عن اهتمامها بتوسيع نطاق مبادرة تسمية الشوارع وترقيم المباني SNBN لتشمل مختلف أنحاء المملكة. وقامت الوكالة الأميركية للتنمية الدولية بإعداد خطة برامجية مبدئية وميزانية تقديرية لتنفيذ مبادرة تسمية الشوارع وترقيم المباني في البلديات الـ 91 المتبقية بهدف تحقيق استكمال تنفيذ هذه المبادرة لكافة مناطق المملكة. ويهدف هذا التقرير إلى تقييم الفوائد الاقتصادية والحوكمة المحتملة لمثل هذا المشروع. وبشكل أكثر تحديداً، يسعى هذا التقرير إلى التعامل مع الأسئلة والأهداف التالية:

1. ما هي التجارب الأردنية والعالمية المقارنة في تطبيق مبادرات التسمية والترقيم بشكل منهجي وإلى أي درجة تستطيع هذه المبادرة أن تساهم في نمو الناتج المحلي الإجمالي في الأردن؟
2. ما هي الفوائد الاقتصادية والمالية المحددة القابلة للقياس كمياً والتكاليف الخاصة بتنفيذ مبادرة التسمية والترقيم في جميع أنحاء المملكة؟
3. مقارنة الفوائد مع التكاليف واستخلاص حسابات معدل العائد الداخلي الاقتصادي (Economic Internal Rate of Return -EIRR) وصافي القيمة الحالية الاقتصادية (ENPV) المتعلقة برفع مستوى مبادرة التسمية والترقيم لتغطي كافة أنحاء المملكة، وبناء على التقديرات الأولية التي أعدتها الوكالة الأميركية للتنمية الدولية، بما فيها تكاليف الصيانة والإصلاحات.

أجرى فريق التقييم خلال الفترة من آب إلى كانون الأول 2020 عملية المراجعة المكتبية وجمع البيانات ووضع النماذج التحليلية والانتها من كتابة التقرير. وقد كانت النتيجة والخلاصة النهائية للتقرير هي أن توسيع نطاق مبادرة تسمية الشوارع وترقيم المباني (SNBN) على المستوى الوطني تنطوي على احتمالات كبيرة للنمو الاقتصادي وتحسين عملية توصيل بعض الخدمات العامة. كما أنه يمكنها رفع كفاءة المرافق العامة التشغيلية.

## المنهجية

اتبع فريق التقييم مجموعة من الأساليب لتنفيذ هذا التقييم وذلك باستخدام بيانات كمية ونوعية من مصادر أولية وثانوية. وقد شملت البيانات الكمية بيانات مشروع CITIES وإجراء مسح لما يزيد على 60 من أصحاب المصالح، ذلك بالإضافة إلى مراجعة التقارير المنشورة بهذا الخصوص. كما شملت البيانات النوعية إجراء مقابلات مع ما يزيد على 110 من المختصين وأصحاب العلاقة وإجراء مراجعة للتقارير والوثائق ذات العلاقة.

وقام الفريق ببناء نموذج تحليل التكاليف والفوائد (Cost Benefit Analysis-CBA) الذي يقيس الفوائد المحتملة لتوسيع مبادرة تسمية الشوارع وترقيم المباني ومقارنة هذه الفوائد مع التكاليف المتعلقة بها بهدف احتساب معدل العائد الداخلي الاقتصادي (EIRR) وصافي القيمة الحالية الاقتصادية (ENPV -Economic Net Present Value). وتؤثر مبادرة التسمية والترقيم على عدد واسع من النشاطات، وهو ما يجعل من إمكانية قياس أثرها الكلي أمراً غير عملي. لذا، قام فريق التقييم بتشكيل عينة من الفوائد، بما فيها الفوائد المالية والتجارية وأخرى تتعلق بالمرافق وخدمات الطوارئ، وهي أمور من المجدي قياسها وتمثل المجال الأوسع، كما أنها متوافقة مع الأولويات الحالية للوزارة في استراتيجية التعاون من أجل التنمية 2020-2025 الأردن (USAID-COUNTRY DEVELOPMENT COOPERATION STRATEGY-Jordan -CDCS 2020-2025)، وخاصة النمو الأكثر شمولية والذي يقوده القطاع الخاص، وتعزيز الأمن المائي، وتعزيز الحوكمة العادلة والديمقراطية، وتحسين النتائج الصحية المجتمعية. كما قام الفريق بالتعاون مع برنامج USAID CITIES بتطوير نموذج تكاليف لتوسيع مبادرة تسمية الشوارع وترقيم المباني في الأردن خلال فترة خمس سنوات تتبعها عملية الإدارة والصيانة (بما فيها الاستبدال الشامل للافتات القديمة) خلال فترة 20 سنة.

كذلك أجرى الفريق تحليلاً متعدد المعايير (Multi Criteria Analysis -MCA) لدراسة الفوائد المحتملة لتوسيع مبادرة تسمية الشوارع وترقيم المباني والتي يشكل قياسها تحدياً. ويعمل التحليل المتعدد المعايير كأداة تكميلية لتحليل التكاليف والفوائد (CBA)، حيث يوفر نظرة معمقة في الفوائد التي لا يمكن قياسها والناجمة عن مبادرة التسمية والترقيم المباني. ويتم تصنيف الفوائد، والتي تضم تلك التي تم قياسها في تحليل التكاليف والفوائد (CBA)، في أربع مجموعات من الخدمات: الحكومة، والمرافق، والخدمات التجارية، والسفر الفردي، إضافة إلى فائدة الخدمات المالية المنفصلة. ويتم قياس هذه الفوائد وتحليلها من خلال أربعة معايير لتقييم الأثر، وهي: الأثر المدني والأثر الاقتصادي وأثر الحوكمة والأثر البيئي. وقد استلهمت هذه الآثار من النتائج المرغوبة التي اشتملت عليها وثيقة "الأردن 2025: رؤية واستراتيجية وطنية"، إضافة إلى أهداف وثيقة استراتيجية وزارة الإدارة المحلية المتعلقة بتسمية الشوارع وترقيم المباني. وقد تم عرض التحليل في مصفوفتين تعملان على قياس كل من الأثر الإجمالي الناتج حسب الفائدة والأثر الإجمالي المقدّر حسب المعيار.

## الخلفية

تؤدي مبادرة تسمية الشوارع وترقيم المباني عملاً هاماً بحيث تقوم على جمع قاعدة بيانات شاملة ودقيقة لجميع العقارات في منطقة ما مع تثبيت لافتات واضحة، كما تعمل على تمكين الحكومة من القيام بمهامها (مثلاً إدارة الضرائب) وتمكين القطاع الخاص (مثلاً خدمة العملاء) والأفراد (مثلاً تحديد موقع الخدمات). ويذكر بأن الأردن قام بإدخال عملية تسمية الشوارع وترقيم المباني في أمانة عمان الكبرى عام 2007 وكذلك في أجزاء من العقبة وإربد مؤخراً. وقد طلبت وزارة الإدارة المحلية أن تقوم الوكالة الأمريكية من خلال برنامج USAID CITIES بدعم تنفيذ مبادرة تسمية الشوارع وترقيم المباني في تسع بلديات كخطوة أولى نحو تحقيق رؤية وزارة الإدارة المحلية بإيجاد خرائط دقيقة وتنفيذ مبادرة تسمية الشوارع وترقيم المباني في جميع أنحاء المملكة. وتسعى وزارة الإدارة المحلية من خلال تنفيذ هذه المبادرة إلى تحقيق جملة من الأهداف بما فيها تمكين التنمية الاقتصادية وتحسين عملية إيصال الخدمات وتعزيز أتمتة العمليات الحكومية وإجراء تحسينات ملموسة في المجتمعات المحلية، وهو أمر متناسق مع أهداف الدول الأخرى التي طبقت مبادرة تسمية الشوارع وترقيم المباني.

ولإدراكها لأهمية تنفيذ مبادرة تسمية الشوارع وترقيم المباني في الأردن، تقوم الوكالة الأمريكية للتنمية الدولية (USAID) في الأردن بتطوير خرائط تسمية الشوارع وترقيم المباني لجميع بلديات الأردن البالغة 100 بلدية وتقوم بتنفيذ المبادرة في تسع بلديات. ويضم دعم الوكالة الأمريكية الإعداد وضبط الجودة للخرائط والتوظيف والتواصل مع المجتمعات المحلية والتركيب لاسماء الشوارع وأرقام المباني في البلديات المستهدفة.

## النتائج

### التجربة العالمية

تمكّن مبادرة تسمية الشوارع وترقيم المباني الدول من إجراء تحسينات كبيرة بعد أن تتوفر العناوين بشكل منهجي محلياً. وفي الدول النامية، تعتبر مبادرة إصلاح الإدارة المحلية للضرائب من أكثر المبادرات شيوعاً والمتعلقة بالتسمية والترقيم. ويبرز هذا كتطبيق محتمل وواعد لمبادرة تسمية الشوارع وترقيم المباني في الأردن. وفي الدول المتقدمة (مثل استراليا، الدنمرك، المملكة المتحدة) يصبح بالإمكان ومن المجدي تحقيق عدد من فرص النمو الاقتصادي المرتكزة على قواعد بيانات لعناوين موحدة ودقيقة عندما يتم تسمية الشوارع وترقيم المباني في جميع أنحاء الدولة. ويدرك أصحاب العلاقة في الأردن أهمية هذا الموضوع ويتطلعون إلى فرص لتطبيق مبادرة التسمية والترقيم على التنمية الاقتصادية بهذا الأسلوب. وتقدم مقارنات دولية كهذه تشجيعاً قوياً وتوجيهاً مفيداً عندما تبدأ الأردن بالسير قدماً في تنفيذ مبادرة تسمية الشوارع وترقيم المباني.

### إدارة الضرائب

سوف تمكّن مبادرة تسمية الشوارع وترقيم المباني البلديات من تقوية شؤونها المالية من خلال تحسين جمع ضريبة الابنية والاراضي وغيرها من الرسوم باتباع نماذج تمت ملاحظتها في دول نامية أخرى وممارسات مطبقة حالياً في الأردن. فضريبة الأبنية والأراضي هي المصدر الرئيسي لدخل البلديات الذاتي ويقدر بحوالي 139 مليون دينار (196 مليون دولار) أو 76% من الـ 182 مليون دينار (257 مليون دولار) التي جمعتها البلديات عام 2019.

عندما يقوم شخص ما بشراء عقار، تسجل البلدية المالك الجديد على أنه مكلف بدفع الضرائب وتقوم بتخمين (تقييم) العقار لتقدير الضريبة، وتوقع من المالك دفع الضريبة سنوياً. إلا أن الامتثال والتطبيق التقليديين يكونان ضعيفين في غالب الأمر، ويؤدي هذا إلى نسب منخفضة من الدفع وفجوات متسعة في التمويل البلدي والاعتماد على تحويلات من الحكومة المركزية. ولذا، تمكّن مبادرة تسمية الشوارع وترقيم المباني البلديات من اتخاذ توجه ابتكاري ونشط نحو التحصيل من خلال إرسال إشعارات بالتحصيل بشكل شخصي إلى منزل المكلف بدفع الضريبة أو إلى مكان عمله، وهو الأمر الذي حسن عملية التحصيل في أمانة عمان الكبرى. ويمكن لتنفيذ مبادرة تسمية الشوارع وترقيم المباني في جميع أنحاء الأردن أن يمكّن بلديات أخرى من اتخاذ هذا التوجه وتوليد 6,3 مليون دينار (8,9 مليون دولار) إضافية كإيراد سنوي.

### خدمات الطوارئ

يجد التقييم إلى أن تنفيذ مبادرة تسمية الشوارع وترقيم المباني في جميع أنحاء الأردن سيساعد على إنقاذ حياة عشرات الناس وتوفير ملايين الدنانير من الأضرار بالمتلكات سنوياً نتيجة التجاوب الأسرع مع حالات الطوارئ.

**طبيباً** ترتبط فترة الاستجابة الأقصر في حالات الطوارئ بشكل قوي مع تحقيق نتائج أفضل بالنسبة لصحة المريض. حصلت في عام 2019 في الأردن أكثر من 365,000 حالة طارئة وأكثر من 7,200 وفاة متعلقة بها. وتقدّر مديرية الدفاع المدني أن بإمكان مبادرة تسمية الشوارع وترقيم المباني وحدها تحسين فترة الاستجابة في مناطق التوسع بواقع 8-10%. ويمكن لهذا التحسن ومعه التغير المقدّر في النتائج لكل دقيقة من الرد الأسرع، أن ينقذ 30 حياة إضافية وتحسين النتائج الصحية للمئات كل سنة.

**الحرائق** - تعتبر الاستجابة الأسرع للطوارئ أمراً حاسماً في حالات مكافحة الحرائق حيث يمكن إنقاذ المزيد من الممتلكات إذا بدأت عملية مكافحة النيران بشكل أسرع. ويتكبّد الأردن حوالي 35 مليون دينار (49 مليون دولار) من الخسائر نتيجة للحرائق كل سنة. ويمكن لتحسين فترة الاستجابة كما تم وصفها أعلاه، إضافة إلى استعادة الممتلكات المقدرة لكل دقيقة من الاستجابة الأسرع أن توفر حوالي 2,2 مليون دينار (1,7 مليون دولار) سنوياً.

### الاستجابة في الأزمات (كوفيد-19)

يجد التقييم أنه يمكن لمبادرة تسمية الشوارع وترقيم المباني أن تكون مفيدة بشكل كبير في الاستجابة الفاعلة والفعالة للأزمات، خاصة في مجال التخطيط المحلي وتقديم الخدمات والتواصل على الصعيد الفردي. وقامت الحكومة الأردنية وعناصرها خلال أزمة كوفيد-19، وخاصة البلديات، بحملة غير مسبوقة لمكافحة الانتشار، بما في ذلك وضع ضوابط آمنة على الحركة وتقييم الأحياء وتوصيل شخصي للضروريات الأساسية للأفراد الأكثر تأثراً بالجائحة. وقد كشفت هذه التجارب، في حالة إدارة الأزمات، القيمة الهائلة لتواجد لافتات أسماء الشوارع في جميع الأمكنة وقواعد بيانات العناوين الشاملة وأنظمة المعلومات الجغرافية وخرائطها، وهي جميعها توفرها مبادرة تسمية الشوارع وترقيم المباني.

**التخطيط المحلي**. يمكن لمبادرة تسمية الشوارع وترقيم المباني أن يساعد مصممي القيود الجغرافية على تحقيق التوازن بين الأمان والوصول إلى الموارد الحيوية. على سبيل المثال، أكد الأمين العام لوزارة الإدارة المحلية أسامة العزام على أن البلديات اكتشفت خلال موجة كوفيد-19 الأولى أن هناك حاجة لخرائط تفصيلية مرتبطة بنظام المعلومات الجغرافية لتصميم "إغلاق ذكي" من خلال تحديد المناطق المستهدفة بدقة بهدف عزل ووضع نقاط التفتيش والغلق للدخول والخروج بشكل فاعل، وتحديد سبل الوصول مشياً للحصول على الخدمات الأساسية مثل أفران الخبز والصيدليات ومصادر المياه (شاحنات توصيل الماء في حال استنفذت الأسرة مخصصاتها من المياه غير القابلة للشرب ومواقع التزود بمياه الشرب). وبالمثل، طلبت البلديات خرائط سكانية مرتبطة بعناوين الشارع لتحديد عدد الأعمال الجديدة المدارة من المنزل والتي يتوجب ترخيصها لملء الفجوات في الخدمات الأساسية. وأخيراً، طلبت المنظمات المجتمعية الخرائط نفسها لتحديد أماكن عمل متطوعها بشكل مناسب عبر الأحياء لتوصيل الخدمات.

**إيصال الخدمات المحلية.** تسمح مبادرة تسمية الشوارع وترقيم المباني لفرق الاستجابة الطارئة الوصول إلى المزيد من المواطنين بسرعة أكبر من خلال تحديد المسارات الأكثر كفاءة عبر المناطق المحلية. على سبيل المثال، استخدمت جرش وبشكل مضاعف نظام تسمية الشوارع وترقيم المباني لإدارة التزايد في عمليات جمع القمامة بكفاءة من خلال تحديد الوضع الأمثل لتوزيع حاويات جمع القمامة ووتيرة إفراغها وذلك باستخدام خرائط الكثافة السكانية التفصيلية. كما اتبعت جرش توجهاً مماثلاً لتحديد مواقع المدارس بصورة أسرع وأسهل عند توزيع أدوات الحماية الشخصية للطلبة الذين يخضعون لامتحان الثانوية العامة (التوجيهي). كذلك استغلت إربد وعجلون نظم تسمية الشوارع وترقيم المباني الخاصة بها واستخدمت خرائط تفصيلية للأحياء لزيادة فاعلية حملات التعقيم التي تقوم بها.

## الخدمات المالية

سوف يمكن توسيع مبادرة تسمية الشوارع وترقيم المباني في جميع أنحاء المملكة من إيجاد المزيد من الحسابات البنكية امتثالاً لمتطلبات الأمن الوطني. تتطلب التعليمات رقم 2018/14 الخاصة بمكافحة غسيل الأموال وتمويل الإرهاب الصادرة عن البنك المركزي من البنوك الحصول على عنوان الشارع الدقيق للأفراد والشركات الذين يقدمون طلباً للحصول على أغلب منتجات البنك المصرفية والائتمانية. وفي أمانة عمان الكبرى، التي يوجد لديها نظام تسمية الشوارع وترقيم المباني شامل، تطبق البنوك بشكل صارم هذا المتطلب. بالمقارنة، في المناطق التي لا يوجد فيها نظام تسمية الشوارع وترقيم المباني بشكل منتظم، تقبل البنوك وبشكل موحد البدائل الأفضل الأخرى المتاحة (مثلاً، فاتورة كهرباء، عقد إيجار). وتتمتع هذه الأساليب البديلة بالامتثال التقريبي وهي تخدم قطاعاً واسعاً من العملاء ولكنها تعرض البنوك والأردن لمخاطر أمنية حيث أن الوثائق البديلة توفر معلومات غير دقيقة عن الموقع. وفي حالات محددة، يمكن لهذه الأساليب البديلة أن تخلق حواجز أمام الخدمات المالية للعملاء الذين ليس لديهم أو لا يستطيعون بسهولة توفير وثائق بديلة. على سبيل المثال، يكون لدى سكان الشقق التي بنيت دون تصاريح (لتجنب تقييم ضريبة أملاك مرتفعة) أحياناً اتفاقيات استئجار غير رسمية وغير موثقة مع أصحاب المبنى. سوف يساعد نظام تسمية الشوارع وترقيم المباني على حل هذه التحديات من خلال السماح لجميع العملاء والبنوك بالامتثال مع هذا التعميم بشكل كامل وفعال.

## الخدمات التجارية

يجد التقييم أن تنفيذ مبادرة تسمية الشوارع وترقيم المباني في جميع أنحاء الأردن سوف ينشط خدمات الإنترنت والتوصيل وتوسيعها عبر كافة مناطق المملكة من خلال خفض التكاليف وتحسين الأوضاع لمزودي الخدمات. **الإنترنت.** يمكن لنظام تسمية الشوارع وترقيم المباني في كافة أنحاء المملكة أن يمكن توسيع الخدمات بـ 5-10% بينما يقوم بتخفيض التكاليف وبالتالي زيادة الوصول إلى خدمات التجارة الإلكترونية والحكومة الإلكترونية والتعليم الإلكتروني. **التوصيل.** سوف يساهم نظام تسمية الشوارع وترقيم المباني على مستوى الدولة بتنشيط العرض والطلب على خدمات التوصيل. يعاني مزودو الخدمات حالياً من صعوبة إيصال الطرود دون عنوان شحن دقيق. ولكن من خلال نظام التسمية والترقيم سيتمكن هؤلاء المزودين من تخفيض الكلفة بواقع 1,7 مليون دينار (2,4 مليون دولار) سنوياً وتحسين الجودة وتوسيع التغطية.

## خدمات المرافق

يجد التقييم أن توسيع مبادرة تسمية الشوارع وترقيم المباني سيتمكن أصحاب امتيازات المرافق العامة في الأردن من الحفاظ على الموارد الطبيعية وتخفيض التكاليف من خلال خفض الخسائر في المياه والكهرباء وتيسير عملية فورة العميل وصيانة الشبكات.

**المياه.** يستطيع نظام تسمية الشوارع وترقيم المباني تحقيق استجابة أسرع بواقع 20% لإصلاح الأضرار المحتملة في البنية التحتية، مما يوفر 280,000 متراً مكعباً من الماء و 0,8 مليون دينار (1,1 مليون دولار) سنوياً. إن كون الأردن دولة شحيحة بالمياه يعني أن تكون لجميع إجراءات توفير المياه أثر مضاعف على هذا المصدر الحيوي ويساعد على التعامل مع أحد معوقات النمو الاقتصادي التي حددها "تشخيص النمو الشامل في الأردن" الذي تم إعدادة من قبل الوكالة الأمريكية للتنمية الدولية في الأردن.

**الكهرباء.** يساعد نظام تسمية الشوارع وترقيم المباني على خفض الخسائر وتكاليف المرافق الكهربائية. سوف يعمل النظام على تيسير عملية قراءة العدادات والفوترة الشهرية وتسريع عمليات التوصيل للعملاء الجدد والتجاوب مع انقطاع الخدمة بالنسبة للمشاركين الحاليين، وكذلك خفض خسارة التوزيع بسرعة أكبر، والتحديد الدقيق للمواقع، الأمر الذي يوفر 0,5 مليون دينار (0,7 مليون دولار) سنوياً.

## تقييم الأثر

في كل السيناريوهات، يبين نموذج تحليل التكاليف والفوائد معدل العائد الداخلي الاقتصادي (EIRR) فوق الحد الأدنى للمعدلات المعتمدة من المانحين والبالغة 10-12%، وصافي "إيجابي" للقيمة الحالية الاقتصادية (ENPV)، الأمر الذي يخلق قيمة اقتصادية للأردن. ويكشف التحليل المتعدد المعايير أن فوائد هامة لا يمكن قياسها تكمل فوائد قابلة للقياس تم وضع قيمها من قبل البنك المركزي، ولها أثر معتدل إضافي على الاقتصاد والحوكمة والروح المجتمعية إضافة إلى أثر معتدل على البيئة.

## المحددات والاعتبارات

هناك أربعة عوامل تحدد وتعيق شمولية ودقة التقييم. الأول أنه يركز فقط على سبع فوائد قابلة للقياس لموازنة الإستنتاجات المدعّمة بالأدلة وذات كفاءة. والثاني أنه يقدّر الفوائد من خلال وضع المزيد من البيانات المحددة مع فرضيات أقل تأكيداً ارتكازاً على مقابلات الخبراء والدراسات المنشورة. وثالثاً، أنه يتوقع فوائد عديدة من خلال افتراض قائم على أن الحكومة الأردنية وغيرها من المنظمات سوف تستخدم نظام المعلومات الجغرافية بشكل مستمر. ورابعاً، إن تقييم أثر تسمية الشوارع وترقيم المباني يعتبراً أمراً غير مؤكد دائماً بسبب أربعة خصائص: إنه تأسيسي وغير ملموس وكامن ومتربط. ويظهر التقييم بما لا يدع مجالاً للشك أن توسيع مبادرة تسمية الشوارع وترقيم المباني هو شيء له ما يبرره.

## الاستنتاجات

سوف يؤدي تطبيق نظام تسمية الشوارع وترقيم المباني في جميع أنحاء المملكة إلى تحقيق نتائج اقتصادية هامة وإيجابية تتعلق بالحوكمة بالنسبة للأردن. ويدعم نظام تسمية الشوارع وترقيم المباني العديد من الأهداف التنموية التي وضعتها الوكالة الأمريكية للتنمية الدولية -والواردة كأولويات في استراتيجية التعاون من أجل التنمية- الأردن (2020-2025) (CDCS)، مثل النمو الشامل الذي يقوده القطاع الخاص والقدرات المعززة لتحسين الأمن المائي. وبالنسبة للأثر الاقتصادي، سوف يعمل توسيع نظام تسمية الشوارع وترقيم المباني على تيسير الروابط الفعلية والرقمية مع الأسواق التجارية التي تعتمد عليها الاقتصادات الحديثة. وسوف ييسر كذلك الامتثال مع النظم البنكية للحد من غسل الأموال. وبالنسبة لأثر توسيع النظام على الحوكمة، فسوف يعزز الوضع المالي للبلديات من خلال إدارة ضرائب بشكل أفضل، ويدعم خدمات الاستجابة بفاعلية خلال الأزمات، ويمكن إدارة المرافق العامة بفاعلية أكبر. وإذا أخذت هذه العناصر مجتمعة بعين الاعتبار، فسوف يوفر توسيع نظام تسمية الشوارع وترقيم المباني في الأردن (عبر فترة التحليل) ملايين الأمطار المكعبة من الماء وملايين الدنانير وإنقاذ حياة العشرات من الأشخاص، الأمر الذي يوفر قناعة قوية للسير قدماً بالمشروع.



# TABLE OF CONTENTS

ABSTRACT .....	ii
EXECUTIVE SUMMARY .....	iii
TABLE OF CONTENTS .....	viii
ACRONYMS .....	ix
1.0 ASSESSMENT PURPOSE AND QUESTIONS.....	1
2.0 PROJECT BACKGROUND.....	3
3.0 ASSESSMENT METHODS AND LIMITATIONS.....	5
3.1 Methods .....	5
3.2 Limitations.....	7
4.0 FINDINGS .....	8
4.1 Jordanian Experience with Systematic SNBN.....	8
4.2 International Experience with Systematic SNBN.....	12
4.3 Cost – Description and Analysis .....	14
4.4 Cost – Synthesis.....	16
4.5 Benefits – Description and Analysis .....	17
4.6 Benefits – Synthesis.....	46
4.7 Net Impact of Measurable Costs and Benefits (CBA) .....	48
4.8 Complementary Impact of Immeasurable Benefits (MCA) .....	49
5.0 CONCLUSIONS.....	51
6.0 RECOMMENDATIONS .....	52
ANNEXES.....	53
Annex I: Assessment Statement of Work.....	53
Annex II: Data Collection Instruments.....	70
Annex III: Sources of Information.....	89
Annex IV: Disclosure of Any Conflicts of Interest .....	98
Annex V: Summary Information about Assessment Team Members .....	107
Annex VI: MELA Team Support .....	119

## ACRONYMS

CBA	Cost Benefit Analysis
CBJ	Central Bank of Jordan
CITIES	Cities Implementing Transparent, Innovative, and Effective Solutions
COI	Conflict of Interest
CV	Curriculum Vitae
DEC	Development Experience Clearinghouse
DoS	Department of Statistics
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
GAM	Greater Amman Municipality
GDP	Gross Domestic Product
GoJ	Government of Jordan
IRB	International Research Board
KAMP	Jordan Development Knowledge Management Portal
KII	Key Informant Interview
LOE	Level of Effort
MCA	Multi Criteria Analysis
MELA	Monitoring, Assessment, and Learning Activity
MODEE	Ministry of Digital Economy and Entrepreneurship
MOLA	Ministry of Local Administration
MSME	Micro, Small, and Medium Enterprise
POC	Point of Contact
SBU	Sensitive but Unclassified
SNBN	Street Naming and Building Numbering
SOW	Scope of Work
TL	Team Lead
TPM	Team Planning Meeting
USAID	United States Agency for International Development

# 1.0 ASSESSMENT PURPOSE AND QUESTIONS

## ASSESSMENT PURPOSE

The United States Agency for International Development (USAID), through its Cities Implementing Transparent, Innovative, and Effective Solutions (CITIES) Project, has partnered with the Government of Jordan (GoJ) and Jordanian municipalities to support a street naming and building numbering (SNBN) initiative. The initiative includes developing maps of street names and building numbers for all 100 of Jordan's municipalities and installing street signs and building numbers in nine municipalities. The GoJ has expressed interest in expanding SNBN across the Kingdom. USAID prepared a notional project plan and estimated budget for implementing SNBN in the 91 remaining municipalities to achieve this nationwide coverage.

The purpose of this report is to assess the potential economic and governance benefits of such a project.

## ASSESSMENT QUESTIONS

Specifically, this report seeks to address the following three assessment questions.

**Assessment Question #1.** What are the Jordanian and international comparative experiences of implementing systematic SNBN, and to what extent can this intervention<sup>1</sup> contribute to sustainable economic growth in Jordan?

### 1.1 Context/Premise

- a. What is SNBN?
- b. What are the objectives of SNBN?
- c. What is the value of these objectives to citizens, government, public utilities, and private sector industry?

### 1.2 Developing countries' experience

- a. Why do developing countries choose to implement SNBN?
- b. Do those decisions align with the objectives and value discussed above?
- c. What are the social, governance, and economic benefits identified from these experiences?
- d. What barriers exist that need to be overcome?

### 1.3 Jordan's experience

- a. Why does Jordan want to implement SNBN?
- b. What is Jordan's experience with SNBN prior to CITIES in:
  - i. Greater Amman Municipality (GAM)
  - ii. Other municipalities
- c. How does Jordan's decision to implement SNBN in GAM and other municipalities reflect the objectives for SNBN discussed above?
- d. Does Jordan's desire to implement SNBN reflect another developing countries' decisions to implement this system discussed above?
- e. Are the barriers that Jordan needs to overcome similar to, or different from, those experienced by other developing countries?

**Assessment Question #2.** What are the specific and quantifiable economic and financial benefits and costs to implementation of SNBN nationwide in Jordan?

### 2.1 GAM case study

---

<sup>1</sup> Originally, there were two interventions, SNBN and LED, under one assessment. This report addresses SNBN and the LED assessment is addressed in a separate report.

a. Has Amman realized social, governance, and economic benefits from SNBN in GAM in areas such as:

- Civic identity
- Urban information
- Municipal service delivery
- Emergency service delivery
- Tax administration
- e-government
- Land use planning
- Neighborhood development
- Economic development/performance

## 2.2 Other municipalities compared to GAM

a. If implemented nationwide, can other municipalities, their citizens, and enterprises reasonably expect to realize social, governance, and economic benefits from SNBN?

b. Mini case studies from municipalities to illustrate anticipated benefits/challenges in areas noted above.

**Assessment Question #3.** Compare the benefits and costs, and produce the Economic Internal Rate of Return (EIRR) and Economic Net Present Value (ENPV) calculations associated with the scaling up of SNBN nationwide, based on the initial estimates prepared by USAID, including maintenance and repair costs and for any additional obligations of property owners?

## 2.0 PROJECT BACKGROUND

SNBN is an important function which combines a comprehensive, accurate address database of all properties in a jurisdiction with clear signage and enables actions for government (e.g., tax administration), private sector (e.g., customer service), and individuals (e.g., locating services). Jordan introduced SNBN to the Greater Amman Municipality (GAM) in 2007 as well as parts of Aqaba and Irbid more recently. The Ministry of Local Administration (MOLA) requested that, through CITIES, USAID support the implementation of SNBN in nine municipalities as an initial step toward MOLA's vision of creating accurate maps and implementing SNBN nationwide. The decision to pursue SNBN nationwide was based upon the combination of positive experiences in Amman and the GoJ's growing support for local development. MOLA's purpose for undertaking SNBN includes enabling economic growth, improving service delivery, enhancing the automation of government operations, and making visible improvements to local communities, which is consistent with purposes of other countries that have implemented SNBN.

### CURRENT PILOT PROJECT

Recognizing the potential of nationwide SNBN, USAID/Jordan is working through the CITIES Project to implement SNBN for all 100 municipalities by developing SNBN maps for each of them as well as to install SNBN in nine of those municipalities by erecting physical street signs/building numbers while embedding SNBN in the mindsets of local residents. USAID support includes preparation and quality control of maps, procurement, community outreach, and targeted installation. To date, the following phases have been implemented or planned.

- **Phase One:** Implementation in city centers of Greater Ajloun, Greater Jerash, and Greater Mafraq (complete)
- **Phase Two:** Implementation in remaining areas of Greater Ajloun, plus New Ramtha and part of Ayn Al-Basha (complete)
- **Phase Three:** Implementation in remaining areas of Greater Jerash, Greater Mafraq, Ayn Al-Basha, plus Greater Madaba, Greater Salt, Greater Karak (the Qasaba), and Greater Ma'an (Started in October 2020 with planned completion by June 2021)

### PROPOSED NATIONWIDE EXPANSION PROJECT

The proposed national SNBN expansion project is designed to reach the remaining 91 municipalities over a five-year period. The following table presents the proposed timeline for the project.

**Table 1. Proposed Expansion Project Timeline**

Municipalities				Year 1			Year 2			Year 3			Year 4			Year 5		
Geographical Area	Total	CITIES Installed	Remain	Months 1-4	Months 5-8	Months 9-12	Months 13-20	Months 21-24	Months 25-28	Months 29-36	Months 37-40	Months 41-44	Months 45-52	Months 53-56	Months 57-60			
<b>Installation</b>				Startup														
1 Irbid 1	9	1	8		Cluster 1													
2 Irbid 2	9		9					Cluster 2										
3 Mafraq 1	9	1	8								Cluster 3							
4 Mafraq 2	9		9		Cluster 4													
5 Jarash/Ajloun	10	2	8					Cluster 5										
6 Amman	8		8								Cluster 6							
7 Balqa	9	2	7		Cluster 7													
8 Zarqa	6		6					Cluster 8										
9 Madaba/Karak	6	1	5								Cluster 9							
10 Karak	8	1	7		Cluster 10													
11 Tafleeh/Ma'an	10	1	9					Cluster 11										
12 Aqaba/Ma'an	9		9								Cluster 12							
<b>Procurement and Environmental Compliance</b>																		
<b>Training Programs</b>				Training programs will be designed for delivery locally, in cooperation with the SNBN and Community Teams														
<b>Community Awareness and Communications</b>				Four Community Teams will work alongside the SNBN Teams and in coordination with Training and MEL														
<b>Monitoring, Evaluation, &amp; Learning (MEL)</b>				MEL will be coordinated with Procurement, SNBN, Communities, and Training Teams														

The installation process is grouped into twelve clusters of seven to nine municipalities. Clustering is designed to reduce travel and other costs of the implemented projects. The final design and timing will be confirmed during the startup/inception period, taking municipal readiness into consideration.



The installation will be led by four teams, each responsible for three clusters. Each team will consist of eight members (four senior staff and four trainees) working in seven to nine municipalities simultaneously. The task of each cluster will include the following.

- Coordinating with procurement; community awareness; training; and monitoring, evaluation, and learning (MEL) throughout the implementation
- Reviewing maps, surveying, and preparing final bills of quantity (Yellow) over a three-month period
- Marking of poles and numbers (Orange) for a period of four months
- Supervising of installation (Green) for a period of eight months

Procurement and environmental compliance will continue throughout the project. Community awareness, communication, and training activity will be conducted in each municipality in coordination with the SNBN teams, and MEL will be coordinated and documented with all teams. The staff needed to operate the project are classified into two groups as Amman (Project Office) staff and Field Staff with 18 project office staff and 153 field office staff.

## 3.0 ASSESSMENT METHODS AND LIMITATIONS

### 3.1 METHODS

The Assessment team followed a mixed methods approach using qualitative and quantitative data from primary and secondary sources. Quantitative data included CITIES project data, a survey of over 60 stakeholders, and published reports. Qualitative data included interviews with more than 110 key informants and a literature review.

#### COSTS

The team estimated the full range of costs that will be required for nationwide SNBN expansion at all phases of implementation based on a variety of complementary sources. The team worked with the CITIES Project to develop detailed estimates of costs for the initial design and installation of nationwide SNBN expansion over a five-year period – including the project to administer it – based on its current experience designing and installing SNBN in nine municipalities through its pilot project. The team gathered data from SNBN departments in Greater Amman Municipality (GAM) and the Aqaba Special Economic Zone (ASEZA) about current costs for the ongoing management and maintenance of an SNBN system in two municipalities, then used two methods (i.e., size of population served, number of streets maintained) to scale those costs for the proposed expansion area and extend them over a 20-year projection period. Finally, the Assessment team researched international experiences to estimate full-system replacement costs in case of obsolescence.

#### BENEFITS

SNBN affects a vast number of activities which would be impractical to consider comprehensively. So, the Assessment team focused instead on a sample of benefits to test the potential value of SNBN expansion beyond reasonable doubt while also maintaining efficiency during the assessment. The team composed this sample to be feasible to measure to a sufficient extent, representative of the broader range of benefits, and aligned with USAID/Jordan's current (i.e., CDCS 2020-25) priorities – particularly of more inclusive, private sector-led growth; strengthened water security; strengthened equitable, democratic governance; and improved community health outcomes. As indicated by the table below, the sample is organized thematically into five categories and 12 topics. The team took a “deep dive” on a sub-set of five topics to estimate their measurable economic benefits as the basis of a Cost-Benefit Analysis (CBA), and it considered all 12 topics qualitatively as the basis of a Multi-Criteria Analysis (MCA) as a complement. (See below for more information.)

**Table 2. Sample of Benefits Analyzed**

Topic		CBA	MCA
Government Services	Tax Administration	✓	✓
	Crisis Response (COVID-19)		✓
	Emergency (Health, Fire)	✓	✓
	Public Safety		✓
	Land & Survey		✓
Utility Services	Water	✓	✓
	Electricity	✓	✓
Commercial Services	Delivery	✓	✓
	Internet		✓
	Taxi/Ride Hailing		✓
Financial Services			✓
Tourism			✓

## COST-BENEFIT ANALYSIS

The team built a CBA model to measure potential SNBN expansion benefits, compare those benefits with the associated costs, and calculate the project's net impact in terms of EIRR and ENPV. The CBA model itself observes several good practices. First, it follows the FAST (Flexible, Appropriate, Structured, Transparent) Standard for clear, flexible design and certain donor conventions (e.g., 20-year projection period, 10% discount rate). Second, it estimates benefits only in the SNBN expansion areas (i.e., 91 remaining municipalities), plus ramps-up those benefits to a "steady state" (i.e., point at which benefits are fully realized and grow only due to population growth and inflation) based on two factors: (i) the completion of project implementation phases (since benefits cannot be realized until the SNBN has been installed) and (ii) the adoption of SNBN (since SNBN benefits usually manifest themselves gradually over several years as organizations and individuals incorporate new street addresses into processes and systems as well as behaviors and culture). Third, it creates three "cases" to define the range of probable outcomes. The "base case" is the model's expected outcome – using assumptions considered most likely to occur. The "upside" and "downside" cases represent outcomes that are not expected but still possible – using assumptions that are aggressive or conservative (respectively) but still realistic.

## MULTI-CRITERIA ANALYSIS

The team conducted MCA to consider potential SNBN expansion benefits which are challenging to measure. SNBN nationwide provides the potential to expand benefits beyond just the quantifiable monetary benefits laid out in the CBA. The Assessment team conducted an MCA, a complementary tool to the CBA, that only considers benefits not captured by the CBA (mutually exclusive), in order to evaluate SNBN's immeasurable benefits, which "[...] are not just non-monetary, but also physically not measurable [...]" ; in addition, this section also consists of benefits that could not be quantified within the scope of the assessment. The MCA "[...] establishes preferences between options by reference to an explicit set of objectives that the decision-making body has identified, and for which it has established measurable criteria to assess the extent to which the objectives have been achieved."

The three impact assessment criteria (civic, economic, and governance) were loosely aligned with the "Jordan 2025: A National Vision and Strategy" desired outcomes of society, business, and government. In addition, the fourth impact assessment criteria, environment, was selected as a result of the strategic importance of addressing climate change, both internationally and nationally. Moreover, the impact assessment criteria were also influenced by MOLA's SNBN strategy document goals; in fact, evidence suggests that SNBN has already enabled progress towards reaching the following MOLA goals, which can be further expanded through SNBN's implementation nationwide.

- Contribute to the success of GPS-Navigation, Postal Code project, focused on improving delivery services and location-based services.
- Facilitate emergency workers, such as civil defense, medical services, public security, and others, to reach the destination.
- Save millions of dinars on fuel that is consumed while searching for addresses, to increase returns for the GoJ's budget, and save citizens' time and effort.
- Achieve administrative and statistical goals

Lastly, given the evidence collected and included in the CBA, the four criteria, which are defined below, were determined to provide complementary support to the CBA findings.

- **Civic Impact:** SNBN-enabled benefits that increase pride, belonging, identification, and trust via improvements in "coexistence, exchange, communication, and integration."
- **Economic Impact:** SNBN-enabled benefits that enhance governmental, commercial, and public cost savings, revenue growth, time savings (informal), and overall economic growth.

- **Governance Impact:** SNBN-enabled benefits that make government and semi-government services provided to the general population more efficient, effective, and transparent.
- **Environmental Impact:** SNBN-enabled benefits that reduce governmental, commercial, and public, adverse practices and effects on the environment – addressing primarily on one environmental challenge (i.e., climate change due to greenhouse gases released by people burning fossil fuels) and a large driver of that challenge (i.e., road transportation – particularly by light-duty motor vehicles and freight trucks), which the Assessment team found most relevant and easiest to assess. Unless otherwise noted, discussions of this criterion directly address the degree to which SNBN generally reduces travel demand (i.e., one of the major, recognized opportunities to reduce emissions in the transportation sector) and specifically impacts the standard indicator of “vehicle miles travelled” by passenger cars and trucks as well as freight trucks. This focus is based on the assumption that each mile of travel that is avoided will in turn avoid the greenhouse gas emissions which would have been created by the passenger and freight vehicles over the course of that mile (e.g., an average of approximately 411 grams of CO<sup>2</sup>).

The team decided to implement a “forced ranking” in the “SNBN Expansion: Breakdown of Benefits” matrix, to compare and analyze the benefits across the four impact criteria, as a means to create differentiation between the individual as well as total benefits and impacts.

### 3.2 LIMITATIONS

Four factors limit the assessment’s comprehensiveness and accuracy. First, it focuses only on seven measurable benefits to balance robust conclusions with efficiency. Second, it estimates benefits by triangulating more certain data with less certain assumptions based on expert interviews and published studies. Third, it assumes for many benefits that the GoJ and other organizations will use GIS consistently. Fourth, assessing SNBN impact is always uncertain because of four characteristics – it is foundational (enables outcomes rather than stimulating them directly), intangible (hard to quantify), latent (some benefits are immediate while others may take years to materialize), and interdependent (some benefits require nationwide implementation). Nevertheless, these limitations do not affect the conclusions because the assessment demonstrates beyond reasonable doubt that SNBN expansion is justified – even after considering a relatively small number of benefits, making conservative assumptions, and adjusting for latency.

## 4.0 FINDINGS

---

### **ASSESSMENT QUESTION #1**

*What are the Jordanian and international comparative experiences of implementing systematic SNBN, and to what extent can this intervention contribute to sustainable economic growth in Jordan?*

---

#### **4.1 JORDANIAN EXPERIENCE WITH SYSTEMATIC SNBN**

Jordan has diverse experiences with SNBN in a range of municipalities – from a mature system in its largest city to emerging systems in smaller cities – which offer valuable reference points and sources of lessons learned to guide potential nationwide SNBN expansion. The sections below highlight some of these experiences with SNBN implementation – including challenges and benefits – in GAM, Aqaba, Irbid, and Jerash.

##### **GAM**

GAM has Jordan's oldest, largest, most mature, and best supported SNBN system in the country – creating a comprehensive reference point for SNBN expansion which the Assessment explored through KIIs targeted on the GAM experience as well as the general process of exploring potential benefits (i.e., for Assessment Question #2). GAM initiated SNBN in 1969 and has made continuous upgrades to its system since then. GAM reached two milestones in this process in 1987, when it achieved SNBN coverage in almost all areas within the city, and 2006, when it began a process of modernizing the system which remains in use today. Today its SNBN system covers an area of 600 square kilometers (approximately 70% of the GAM limits), benefits a population of 2.5 million citizens, and 11,000 of its 16,000 streets.

SNBN has become a Department within GAM with a dedicated leader, sizable staff, and own budget. It plans work in five (of its current 22) areas every two years, including the maintenance and/or refurbishing of signs and numbers, plus the implementation of new numbering and naming in areas that have new streets or numbers. GAM has its own factory for SNBN materials with 7-8 employees with the ability to produce 100 signs on daily basis. GAM also maintains a field team of 30 employees tasked with fixing the signs on walls and poles as well as two vehicles.

Despite the lack of formal, analysis studies to confirm and substantiate the impact of its SNBN system, GAM identifies a number of benefits which SNBN has created. For example, GAM emphasizes the efficiency that SNBN creates for all location-based services. It also notes that its extensive e-government services all require street names and building numbers. Building on this, GAM specifies the following organizations in different sectors whose work has been positively transformed by SNBN.

- Municipal government (i.e., departments within GAM)
- Maintenance and Construction
- Construction
- Pest Control
- Central government
- Royal Jordanian Geographic Center
- Ministry of Digital Economy and Entrepreneurship (MODEE)
- Department of Statistics (DOS)
- Courts of Law
- Private sector
- Distributors (e.g., water, yogurt, other consumables)



- Marketing Companies
- Nuqol Group and Sanabel Group<sup>2</sup>
- Utilities
- Electricity Company
- Telecommunication Companies

The Assessment examined through KIIs a representative from each of the first three stakeholder groups in order to understand better the impact of SNBN in GAM: Maintenance and Construction Department within GAM, Department of Statistics within central GoJ, and Sanabel Group. (The Assessment consulted numerous stakeholder from the fourth group, Utilities, in the course of work on Assessment Question #2.) GAM's Maintenance and Construction Department has been a primary beneficiary of its SNBN system. As soon as GAM introduced the newest SNBN system, the Department integrated the precise address data into its system for daily operations and generated more detailed maps to facilitate transportation to the site of a maintenance claim or construction project. This enhancement has led to dramatic improvements in maintenance claims – due to faster response time as well as greater accuracy (i.e., since the team is guaranteed to be working on the exact site of the claim). For example, when responding to urgent maintenance requests in an area with SNBN, the Department deals with claims within approximately one hour. When responding to such requests in areas without SNBN, however, the Department's response can take up to four hours. Similarly, SNBN has led to greater efficiency for construction projects. For example, engineers confirm that approximately 15 minutes of travel time have been saved on each trip due to the introduction of the SNBN system.

The Department of Statistics (DoS) has also benefited significantly from the SNBN system in GAM. A major part of DoS's work involves clustering geographical areas and taking samples for its reporting and analysis. In the past, DoS developed its own proprietary numbering system – based on dividing larger areas into smaller blocks – which it used for its sampling work. After the modernization of SNBN in GAM, however, DoS began using it and observed benefits of increased accuracy in terms of reaching target areas as well as more efficient taking and document sampling for studies. As a result, DoS has integrated GAM's SNBN into processes and systems. Thanks to clear street names and building numbers, DoS now defines its samples much more efficiently and effectively. DoS believes that if SNBN is expanded to all Governorates, then its nationwide network will improve overall.

Sanabel is a leading manufacturer of health products in the Middle East with extensive distribution of goods within Jordan. Sanabel historically had a department specializing in the development of its own map and address tracking system. While relatively sophisticated, these resources were still inefficient, ineffective, and costly. After the SNBN system was modernized in GAM, Sanabel decided to integrate its data into its system and operations immediately. Sanabel approached GAM and asked its GIS department to develop for them a customized GIS system covering their areas of operations. GAM collaborated, and the customized GIS system was installed into the devices used in all of Sanabel's delivery trucks. As an end result, Sanabel benefited not only from the physical street signs which GAM installed, but also the data which was used to create a highly efficient and effective GIS navigation system. Sanabel has continued to work with GAM to improve the GIS system further. As a result of this system, Sanabel has realized a number of benefits, including lower labor and transportation costs, higher operational utilization, and increased revenue.

(SNBN has created many other benefits in GAM beyond these three representative examples, but it is not practical to catalog them all here. Instead, the Assessment uses GAM as a point of reference for each of the 12 benefits that are considered in Assessment Question #2 (below). This serves the dual purpose of learning more about the GAM experience with SNBN while defining through clear comparisons potential opportunities in the proposed SNBN expansion area.)

---

<sup>2</sup> The GIS Department in GAM programmed and customized a navigation system for these two private companies to support their distribution processes.

## AQABA SPECIAL ECONOMIC ZONE (ASEZA)

The Aqaba Special Economic Zone (ASEZA) has implemented SNBN since 2003 and – as the only small city in Jordan with such a mature SNBN system – offers numerous lessons for the proposed SNBN expansion which were learned through Assessment KIIs. The ASEZA government has undertaken SNBN on its own initiative and with its own funding. (Unlike many of its other initiatives, ASEZA did not partner with any donors and seems not to have tapped any unique resources or advantages which it enjoys as a special economic zone.) This demonstrates that even relatively small municipalities (or special zones, in this case) can implement and manage a new SNBN system by themselves, which is encouraging as nationwide expansion is being considered. It has not been easy, however, since ASEZA has struggled with prioritization and funding. It initially prioritized SNBN and invested to install a core system as a small, stand-alone project in 2003. It then oscillated over a number of years through two to three cycles of de-prioritization with no funding and prioritization with funding for maintenance and expansion. It was not until 2017 that SNBN was supported by a specialized division with the ASEZA government with a formal regulation to govern the work of that division. In the meantime, the highly committed head of the SNBN department has persevered by flexing between her core focus on SNBN and other city planning priorities.

During the early days, ASEZA worked closely with the GAM SNBN department and benefited from their experience, which demonstrates not only that GAM has valuable lessons to teach other municipalities (including relatively small ones), but also that these lessons can be accessed and applied successfully. Like GAM, ASEZA began a little more than one year ago to insource the fabrication and maintenance of their SNBN materials and currently employ 4-5 people in a small factory dedicated to the design and production of a range of signage. This move has been efficient and effective – as ASEZA has been able to maintain the standards of quality set through its prior process of tendering work to vendors while generating significant cost savings – as well as proven that in-house sign making can be done successfully at scales much smaller than GAM (or Irbid – as described below). ASEZA also referred to experiences with SNBN in the United States, Canada, and the United Arab Emirates which underscores the relevance of international reference points when designing and implementing SNBN more broadly in Jordan.

ASEZA reports many of the same benefits from SNBN which have been observed in GAM, such as aiding local wayfinding, facilitating service delivery (e.g., water, electricity, phone, post), reducing CDD response time to emergencies, and providing general support to a range of government programs. This supports the extrapolation of experiences in GAM (despite its unique characteristics as the capital) to other municipalities when looking forward to the benefits and preparing for the challenges of expansion.

ASEZA has placed strong emphasis on the governance of its SNBN system. There is a committee for SNBN which meets 2-3 times each month and includes one representative from the Governorate, the Head of its DLS, two representatives of the local community, and representatives from ASEZA itself. This committee is responsible for approving each decision related to SNBN before submitting proposals to the Board of Commissioners and making the transition to implementation. At the same time, ASEZA has discovered a special challenge and opportunity regarding tourists. On the one hand, ASEZA is (in part) a touristic destination which relies on and hosts a high volume of tourists each year – making them an important stakeholder in their SNBN system. On the other hand, tourists are not represented on ASEZA's SNBN committee. This inconsistency came into focus early in ASEZA's implementation of SNBN when some tourists had trouble reading the Anglicized names that were initially used. This experience, including the need and associated risk that it underscores, may be something for other touristic municipalities participating in the SNBN expansion to bear in mind and perhaps mitigate. In addition to robust governance, ASEZA recommends active citizen engagement (e.g., preparation and publication of an SNBN "user's guide") to maximize the benefit from the SNBN system, which may also be helpful for other municipalities to consider.

## IRBID

After beginning its SNBN journey over 30 years ago, Irbid has placed greater emphasis on SNBN over recent years and – as the only large city outside of Amman with such a mature SNBN system – also offers numerous lessons for the proposed SNBN expansion which were learned through Assessment KIIs.

Like ASEZA, Irbid has been implementing SNBN on its own (i.e., without central government or donor support), which demonstrates that secondary cities (like small municipalities represented by ASEZA) can undertake the implementation of SNBN successfully. In ASEZA, SNBN didn't progress quickly after initial implementation because it wasn't consistently prioritized by the local government. In Irbid, by contrast, SNBN has been consistently *prioritized* by local government, but also hasn't progressed quickly for another reason – limited financial (i.e., funding) and human (i.e., capabilities) resources. As an illustration of this first point, Irbid explains that SNBN is part of its municipal strategy and therefore explicitly incorporated into its formal planning and decision-making processes. (Part of the current strategy is the aspiration to extend SNBN throughout the Governorate over the coming five years.) These lessons may be helpful to the SNBN expansion project -- as it considers the array of support (e.g., inclusion in strategy, prioritization in annual budgeting and work planning, adequate and consistent financial resources, adequate human resources -- skills and capabilities) needed to sustain the SNBN systems it installs and to support their growth over time.

Like ASEZA, Irbid successfully insourced the fabrication and maintenance of its signs and other SNBN materials approximately eight years ago and currently operates the facility with seven employees. It cites some challenges, however, in equipping it with sufficiently modern equipment as well as securing sufficient funding for its operation –as it falls under the budget of other factories within the municipality. Furthermore, Irbid suggests scaling this resource through the creation of three regional shared service centers –in the North, South, and Center of the Kingdom. This offers not only a specific idea, but also a general spirit of collaboration – both of which may be instrumental once Jordan's municipalities consider the best ways to sustain their SNBN systems. Irbid has also expressed willingness to share its other SNBN experiences with municipalities undertaking SNBN for the first time.

Irbid confirms the realization of benefits from SNBN which were previously articulated by GAM and ASEZA, such as the facilitation of location-based services (e.g., electricity, water, telecommunications), the speedy arrival of emergency services, and the efficiency of municipal maintenance work. In addition, however, Irbid describes a number of additional benefits which it has enjoyed – and which other municipalities might consider capturing – such as facilitating (i) transportation for students, (b) the delivery of community services (e.g., social grants and aids like *Tikyat Um Ali*), (c) and urban planning based on detailed population density maps. In addition, Irbid reports that it is beginning to initiate a wide range of e-government utilizing the precise address information that is provided by SNBN. Finally, Irbid emphasizes the potential emerging role of SNBN in improving social relationships between city residents.

## JERASH

Jerash is currently participating in the CITIES Project SNBN pilot and can therefore represent the experience of a medium-sized city in the critical early stages of SNBN implementation. While it is probably too early to learn as much from the experience in Jerash compared with the decades of experience between the other cities profiled in this section, some early lessons emerged from Assessment KIIs. Like Irbid, Jerash has included SNBN implementation in successive (i.e., 2013-18 and 2018-23) municipal strategic plans – thereby including it formally in its planning and budgeting processes. Nevertheless, it also cites sustainability as a challenge, echoing sentiments from the other municipalities about access to adequate, consistent financial and human resources.

About potential benefits from SNBN, Jerash reinforces some familiar themes such as alleviating traffic issues, enhancing the delivery of location-based services (e.g., post, emergency response), supporting e-government and e-commerce initiatives, and strengthening urban planning by building an accurate, updated database of building density (including a detailed accounting of each building) in each area. It also, however, emphasizes a number of ideas which were not raised in other municipalities. First, Jerash emphasizes the impact that SNBN has already had on local tourism, especially supporting the development of a touristic itinerary and path from the southern entrance to the northern exit of the Jerash historical site with indicative signs of targeted destinations within the Jerash city center. Also, with respect to tourism, Jerash is currently leveraging SNBN to encourage more visits and longer stays by linking local hotels to GPS for easier, more accurate location by tourists. Second, Jerash emphasizes potential economic impacts of SNBN, namely encouragement to potential investors and enablement for home-based jobs and SMEs. Third, it mentions the facilitation of financial transfers – suggesting a potential additional role for SNBN to play in ensuring access to financial services.

Jerash mentions the perennial challenge within the community about selecting street names, but more importantly emphasizes the effectiveness of the Mayor in overcoming these challenges in its case – which may provide a helpful lesson for other municipalities facing similar challenges. In order to preempt such challenges before they emerge, Jerash underscores the importance of comprehensive community consultation at the outset of SNBN implementation in order to avoid conflict further down the process. On a related note, Jerash emphasizes community awareness as a success factor in the adoption and use of new and growing SNBN systems -- echoing sentiments heard in other Assessment KIIs. Finally, Jerash suggests that SNBN is making citizens more willing to pay taxes because they see (in this visible public work) the value that is being created by their tax payments.

## 4.2 INTERNATIONAL EXPERIENCE WITH SYSTEMATIC SNBN

International experiences implementing SNBN in comparable settings provide an informative understanding of opportunities and challenges for full SNBN implementation in Jordan. In emerging economies, new SNBN interventions- particularly over the past 20 years in which the global demographic shift from rural areas to urban centers has manifested- have enabled and stimulated a variety of positive development outcomes. A World Bank study of Africa found that, in some cases, donor funded SNBN work resulted in improved tax administration as well as municipal and utility services. For instance, Mozambique's staggered addressing initiative has helped reduce costs and maximize efficiency for public and private service and utility providers. It has also been used for other applications such as to track epidemics, develop an economic database, and organize elections. Similarly, in Togo, a concurrent introduction of an addressing system and residence tax has helped local municipalities build a vast city street addressing and taxpayer identification program. This helped identify previously missed taxpayers, raising the level of property-based taxpayers from 300 to over 80,000 potential taxpayers for the residence tax. Expansion of the tax base is contributing to improved financial resources for municipalities, leading to improved service provision and enhanced urban investments.

In addition to improved tax administration, SNBN projects have other far-reaching direct and indirect impacts. In Burkina Faso, though implementation was incomplete, the private sector capitalized on an opportunity that arose due to street addressing and offered water and electricity concessionaires new services to ensure delivery of bills and unpaid account reminders. This created a "win-win" of additional employment opportunities as well as better collections for public utilities. Further, in Guinea, improved addressing has led to greater neighborhood accessibility and waste management (waste collection has increased from 20 to 80%, penetration rate is 64%, 76% bills are paid; ~3000 jobs created). A synergy has been created between public and private sectors, and cholera – which

had been a latent disease due to the poor sanitation caused by inadequate garbage collection – is no longer endemic there.

While experiences like those of Mozambique and Togo are inspiring, some other Sub-Saharan SNBN initiatives had a more limited impact and faced challenges from which we can learn. For instance, Senegal embarked on a street addressing project with dual objectives of addressing main cities and facilitating broad-based local tax collection. Progress, however, was limited due to a lack of coordination between the fifteen cities initially involved in the project - just eight out of the 15 achieved their goal of expanding the tax base. Similarly, street addressing in Burkina Faso was successful in identifying a previously unknown tax base for a residence tax, but collections remain below expectations due to inefficiencies in the process, sub-par management, and a lack of local government involvement and political will.

Advanced economies have also implemented systematic SNBN initiatives that improve upon existing systems and help them evolve into more unified, accurate, and accessible systems which, in turn, unlock another generation of opportunities and benefits. For example, Australia created a National Address Management Framework with a single, authoritative national address dataset as well as standard, efficient, and effective ways of verifying addresses. This improved service delivery, emergency planning, and counter-terrorism efforts. Denmark established a common address database through nationwide collaboration of local governments. This lowered costs and barriers for the private sector to deliver products and services. One early example of this was the development of a new route planning app for public transit users in every city across the country called “Journey Planner.” Prior to the establishment of the common address database, the “Journey Planner” developer would have to engage with 275 individual municipalities in order to obtain the detailed address information needed for its app. Managing 275 different points of contact, data sharing agreements, and data formats would naturally be slow and costly for the developer. With the common address database, however, the developer could instead have access to the addresses for all 275 municipalities in one data format through one comprehensive agreement – free of charge. The United Kingdom also created a unified central national database that generated an impressive economic return estimated at four times the initial investment.

The experience in implementing SNBN for Jordan, which is highly urbanized (over 90%) and more closely bound to the global and regional economies, should be more like that of the more-developed economies which have enjoyed exceptional economic returns, several times the initial investment. In particular, the step following SNBN of having this information organized and accessible in databases and, eventually, in GIS, improves not only government services but, when the information is also accessible to businesses or the public, supports private sector dynamism and innovation such as efficient ordering and “last-mile” delivery services and improved billing and collection.

**Table 3. Sample of SNBN-Enabled Initiatives in Developing Countries**

Initiatives		Burkina Faso	Benin	Cameroon	Guinea	Mali	Mauritania	Mozambique	Niger	Senegal	Togo
Public Services	Post		✓				✓		✓		
	Street Maintenance	✓		✓			✓				
	Waste Collection			✓							
	Water & Electricity		✓				✓				
Civics	Addresses	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Elections						✓				
Economic Development							✓				
Land Management		✓	✓								
Tax Administration		✓	✓		✓	✓		✓	✓	✓	

Source: World Bank, “Directions in Development” Report Number 32932



International experience demonstrates that SNBN supports initiatives which promote the better governance and economic growth that Jordan seeks. SNBN enables countries to pursue a range of improvements once systematic addresses are available locally. In developing countries (See Table 3), the most common SNBN-enabled initiative is the reform of local tax administration.

This is emerging as a promising potential application of SNBN for Jordan. In developed countries (e.g., Australia, Denmark, UK), a number of economic growth opportunities based on unified, accurate, and accessible national address databases become feasible once nationwide SNBN is in place. Jordanian stakeholders recognize and look forward to opportunities of applying SNBN to economic development in this way. Such international comparisons offer both strong encouragement and helpful direction as Jordan moves forward with SNBN.

---

## **ASSESSMENT QUESTION #2**

*What are the specific and quantifiable economic and financial benefits and costs to implementation of SNBN nationwide in Jordan?*

---

### **4.3 COST – DESCRIPTION AND ANALYSIS**

The assessment considers the full range of project costs which fall into three categories. First, Initial Investment covers one-time costs (both direct and indirect) of installing SNBN in 91 municipalities over five years, including the fabrication and collocation of physical street name/building number signs, the purchase of a new enterprise license for GIS software (to be shared by all municipalities supported by MOLA), the establishment of eight workshops (shared regionally) for small-scale signage fabrication and repair, and SNBN awareness programming in local communities.<sup>3</sup> Second, Management and Maintenance covers the annual costs for these 91 municipalities to manage (e.g., keep maps updated, install signs for new buildings and streets) and maintain (e.g., repair damaged signs) their SNBN signage, plus to renew every three years MOLA's enterprise license for GIS software. Third, Replacement covers the periodic costs (i.e., every 10 years including inflation) for these 91 municipalities to replace due to obsolescence all of the signage installed during the proposed expansion.<sup>4</sup>

#### **INSTALLATION AND REPLACEMENT COST**

The team estimates – based on guidelines provided by the CITIES Project – total initial expansion investment of \$58.9 million (M) in direct costs over 60 months, including salaries for short- and long-term staff working in the field and project headquarters in Amman; materials fabrication, delivery, and installation; community awareness activities; GIS software; and project overhead. The team also estimates indirect implementer costs (i.e., fringe, overhead, and general and administrative expenses) of \$22.2 M. The team has based salaries and other factors based on average prevailing rates among USAID contractors, but these vary by both implementer and donor – and could therefore be even lower or higher than the estimated range. The team estimates full system replacement cost for \$60.8 M for the expected obsolescence of all signage 10 years after its initial installation based on its original fabrication, delivery, and installation cost of \$46.2 M plus inflation. (It may not be necessary to replace all signs in all places 10 years after installation, but the Assessment team assumes this for conservatism.) Replacement does not include indirect implement

---

<sup>3</sup> MOLA is currently in the process of purchasing a new enterprise license for GIS software, but this cost is included in the Initial Investment cost estimate for conservatism.

<sup>4</sup> The scope of all cost estimates is generally the 91 municipalities which we are considering for SNBN expansion. One exception is the enterprise license for GIS software – the quotation includes an unlimited number of users and could therefore be used by all municipalities supported by MOLA.

costs (i.e., general and administrative expenses) because the Assessment team assumes that the GoJ (e.g., MOLA) itself will manage this procurement and implementation.

**Table 4. Breakdown of Estimated Installation and Replacement Cost**

Position			Persons	Monthly Salary	Months	Base Salaries	Fringe	Overhead	G&A	Total Salaries
Field Staff	SNBN Team	Supervisors	32	\$ 900	56	\$ 1,612,800				\$ 2,621,808
		Surveyors	100	\$ 360	1	\$ 36,000				\$ 58,523
		Quality Control	4	\$ 1,800	56	\$ 403,200				\$ 655,452
	Community Awareness Team		16	\$ 1,800	42	\$ 1,209,600				\$ 1,966,356
	Environmental Compliance		1	\$ 9,000	60	\$ 540,000				\$ 877,838
Amman Staff	Project Director		1	\$ 14,000	60	\$ 840,000	38%	28%	28%	\$ 1,877,597
	Deputy Project Director		1	\$ 9,000	60	\$ 540,000	35%	28%	28%	\$ 1,185,081
	Operations Director		1	\$ 9,000	60	\$ 540,000	35%	28%	28%	\$ 1,185,081
	Community Awareness Director		1	\$ 4,944	60	\$ 296,610	35%	28%	28%	\$ 650,939
	Training Director		1	\$ 4,944	60	\$ 296,610	35%	28%	28%	\$ 650,939
	MEL Director		1	\$ 4,944	60	\$ 296,610	35%	28%	28%	\$ 650,939
	Procurement Director		1	\$ 3,500	48	\$ 168,000	35%	28%	28%	\$ 368,692
	Procurement Managers		2	\$ 2,400	48	\$ 230,400	35%	28%	28%	\$ 505,634
	Finance Manager		1	\$ 3,500	60	\$ 210,000	35%	28%	28%	\$ 460,865
	Accountant		1	\$ 2,400	60	\$ 144,000	35%	28%	28%	\$ 316,022
	Human Resources Manager		1	\$ 3,000	60	\$ 180,000	35%	28%	28%	\$ 395,027
	Human Resources Assistant		1	\$ 1,800	60	\$ 108,000	35%	28%	28%	\$ 237,016
	Administrative Assistant		1	\$ 1,000	60	\$ 60,000	35%	28%	28%	\$ 131,676
	Logistics, Safety, & Security Manager		1	\$ 1,600	56	\$ 89,600	35%	28%	28%	\$ 196,636
	IT Support		2	\$ 2,000	60	\$ 240,000	35%	28%	28%	\$ 526,703
	Office Cleaner		1	\$ 750	60	\$ 45,000	35%	28%	28%	\$ 98,757
	Drivers		14	\$ 900	52	\$ 655,200	35%	28%	28%	\$ 1,437,898
	Receptionist		1	\$ 750	60	\$ 45,000	35%	28%	28%	\$ 98,757
Item			Quantity	Price per Unit	Months or Years	Base Cost	Fringe	Overhead	G&A	Total Cost
Other Direct Costs	Office Rent		450	\$ 140	5	\$ 315,000			28%	\$401,625
	Water & Electricity		1	\$ 750	60	\$ 45,000			28%	\$57,375
	Running Costs		1	\$ 3,000	60	\$ 180,000			28%	\$229,500
	Petrol		1	\$ 4,000	60	\$ 240,000			28%	\$306,000
	Cars		12	\$ 45,000	0	\$ 540,000			28%	\$688,500
	Car Parking		12	\$ 150	60	\$ 108,000			28%	\$137,700
	Furniture		1	\$ 50,000	0	\$ 50,000			28%	\$63,750
	Laptops		48	\$ 1,100	0	\$ 52,800			28%	\$67,320
	Printers		10	\$ 400	0	\$ 4,000			28%	\$5,100
	Tablets		25	\$ 400	0	\$ 10,000			28%	\$12,750
	Supplies		1	\$ 5,000	5	\$ 25,000			28%	\$31,875
	Printing & Advertising		1	\$ 5,000	5	\$ 25,000			28%	\$31,875
	Office Access Control		1	\$ 3,300	0	\$ 3,300			28%	\$4,208
	Vehicle Insurance		12	\$ 750	5	\$ 45,000			28%	\$57,375
	Office Insurance		1	\$ 200	5	\$ 1,000			28%	\$1,275
	Vehicle Maintenance		12	\$ 500	5	\$ 30,000			28%	\$38,250
	Copier Maintenance		2	\$ 1,600	5	\$ 16,000			28%	\$20,400
	Lawyer Retainer		1	\$ 5,000	5	\$ 25,000			28%	\$31,875
	Lodging, Meals and Incidentals		12	\$ 10,000	5	\$ 600,000			28%	\$765,000
	GPS Tracking System		50	\$ 168	5	\$ 42,000			28%	\$53,550
Item			Average Items per Street	Cost per Item	Average Number of Streets	Base Cost	Fringe	Overhead	G&A	Total Cost
SNBN Materials	Bases & Poles		1.8	\$98.16	53,200	\$9,400,169			28%	\$11,985,216
	Signs		5.3	\$42.09	53,200	\$11,934,984			28%	\$15,217,105
	Wall Plates		6.6	\$14.83	53,200	\$5,191,508			28%	\$6,619,173
	Numbers		28.3	\$2.82	53,200	\$4,257,503			28%	\$5,428,316
	Delivery & Installation (50% Costs)					\$15,392,082			28%	\$19,624,905
Subtotal: Base Cost for Replacement (i.e., subject to annual inflation)						\$46,176,247				\$58,874,716
Item			Cost per Item	Number of Items	Base Cost	Fringe	Overhead	G&A	Total Cost	
Community Awareness Activites			\$4,360	93	\$405,480			28%	\$516,987	
GIS Software			\$850,000	1	\$850,000			28%	\$1,083,750	
Maintenance & Repair Workshops			\$40,000	8	\$320,000			28%	\$408,000	
Total: Installation					\$58,895,458				\$81,042,986	

## MANAGEMENT AND MAINTENANCE COST

The team estimates ongoing annual operating and maintenance costs at JD1.5 M (\$2.2 M) for labor and materials, plus approximately JD0.2 M (\$0.3 M) for GIS software license renewal. These estimates are based on actual costs incurred in GAM, triangulated with actual costs incurred in ASEZA, and scaled up for the SNBN expansion area using two methods (i.e., size of population served, number of streets maintained) to create a realistic range.

**Table 5. Breakdown of Estimated Management and Maintenance Cost**

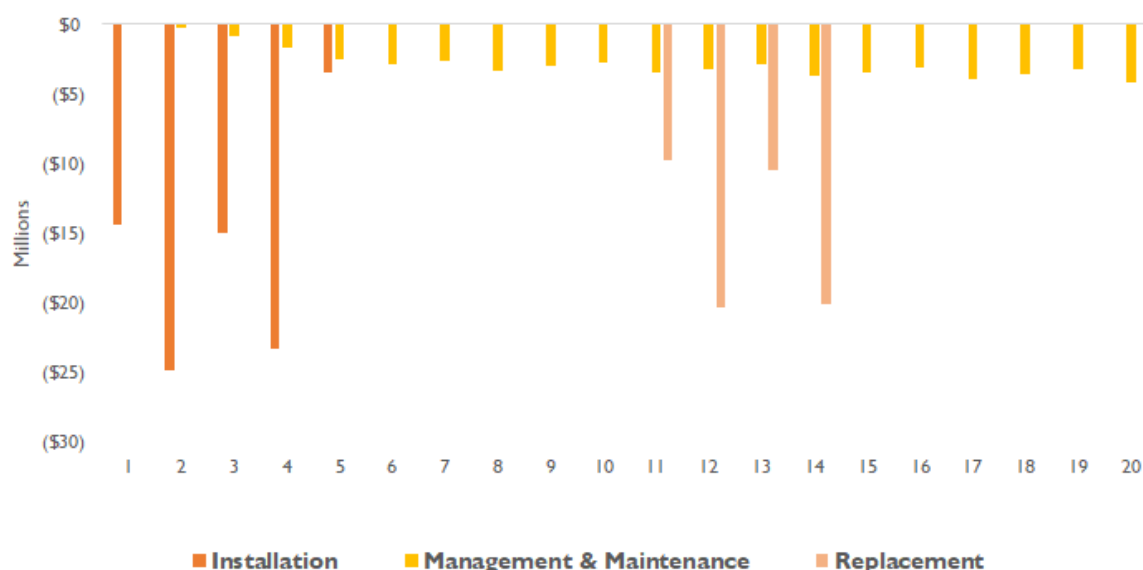
	Quantity	Monthly Salary	Benefits Factor	Annual Cost
<b>Baseline: Greater Amman Municipality (GAM) Average Annual SNBN Cost</b>				
Materials				JD 250,000
Staff				
Head of Department	1	JD 850	JD 119	JD 11,628
Maintenance				
Supervisors	2	JD 635	JD 89	JD 17,374
Staff	30	JD 450	JD 63	JD 184,680
Fabrication	8	JD 450	JD 63	JD 49,248
<b>Total</b>				<b>JD 512,930</b>
<b>Base Case: Average of Upside &amp; Downside Cases</b>				
Implied SNBN Expansion Area Cost				<b>JD1.5 M (\$2.2M)</b>
<b>Upside Case: Scale by Population</b>				
Population				
GAM				3,816,980
SNBN Expansion Area				4,558,308
Cost per Person (GAM)				JD 0.13
Implied SNBN Expansion Area Cost				<b>JD0.6 M (\$0.9 M)</b>
<b>Downside Case: Scale by Streets</b>				
Number of Streets				
GAM				11,000
SNBN Expansion Area				53,200
Cost per Street (GAM)				JD 46.6
Implied SNBN Expansion Area Cost				<b>JD2.5 M (\$3.5 M)</b>

Plus approximately JD 0.2M (\$0.3 M) per year in all Cases for renewal of GIS enterprise software license

## 4.4 COST – SYNTHESIS

The team combined these three sets of costs estimates to form a complete cost estimate over the 20-year projection period which is illustrated by the chart below.

**Figure 1. Total Costs by Year and Type (20 Year Projection Period, Base Case)**



## 4.5 BENEFITS – DESCRIPTION AND ANALYSIS

The Assessment team considered a sample of 12 benefits organized across the five categories of government, utility, financial, and commercial services as well as personal travel. Following is a description of each highlighting the aspects most relevant to the two analyses – CBA and MCA – which follow.

All measurable benefits are scaled by population to the 91 municipalities which are in scope for SNBN expansion, plus expressed assuming the “base case” and “steady state” explained above in the Methods section. For more information about measurable benefits estimates, please see the supporting table at the end of each section which shows how the key factors interact to generate the estimate – assuming a “first steady state year” (i.e., the first month “steady state” value annualized) and the “base case.” For complete information, please see the SNBN Assessment Cost-Benefit Analysis model which accompanies this report. All immeasurable benefits are evaluated against the four evaluation criteria described in the Methods section and ranked on a five-step scale ranging from negligible or least impact to greatest impact. These rankings are illustrated by “pie” or “moon” diagrams – with an empty circle denoting the level of impact, a full circle the highest level, and the partial circles some degree of impact in between.

### GOVERNMENT SERVICES: TAX ADMINISTRATION

The Assessment finds that nationwide SNBN will enable GoJ to significantly improve its administration of two major taxes: municipal Property Tax and national Income Tax. These improvements will enable both municipalities and the central government to collect taxes owed in more timely, efficient, and effective ways as well as help municipalities to broaden their tax base by ensuring a larger share of eligible residents are registered as taxpayers. The Assessment team anticipates these improvements based not only on patterns observed in other developing countries which have implemented SNBN, but also on emerging practices in GAM and other municipalities with some form of SNBN. These improvements will strengthen municipal and central government finances and capacity to provide services as well as bolster the civic spirit of Jordanian taxpayers.

**Overview** GoJ mobilizes tax revenue of approximately JD4.9 billion (B) (\$6.9 B) annually (2019) from five major sources.<sup>5</sup> General Sales Tax (GST) (i.e., Value Added Tax) and Special Sales Tax (e.g., tobacco, alcohol, vehicles) are the two largest sources of revenue for the central government, representing together approximately JD3.2 B (\$4.5B) or 67% of total tax revenue. The balance is accounted for mainly by Income Tax at JD1.1 B (\$1.6 B) or 22%, Customs duties at JD0.3 B (\$0.4 B) or 6%, and Property Tax at JD0.2 B (\$0.3 B) or 4%. All these revenue sources flow to the central government, except Property Tax and municipal fees which flow to municipalities.

Among these domestic revenue sources, two – Property Tax and Income Tax – will benefit most from nationwide SNBN. GST has a high level of compliance for a variety of reasons: it applies only to a relatively small group of 35,000 taxpayers – most of whom own and operate manufacturing operations; GST taxpayers are required to have a post office box to ensure the timely delivery of tax notices; GST taxpayers have a relatively close relationship with tax authorities since GST is required to be paid relatively frequently – every two months; and, enforcement for the Kingdom’s single largest revenue source is the strictest there is (e.g., for payments more than 30 days late – relatively high, flat-rate penalty which escalates for every offense *plus* 0.4% interest accruing weekly on unpaid balances *plus* freezing of all assets). SST, Customs, and other national fees also have a high level of compliance because they are required to process high-priority transactions and collected personally. By contrast, Property and Income Tax have less frequent, less direct contact with a much larger community of taxpayers plus less stringent enforcement mechanisms.

---

<sup>5</sup> Ministry of Finance, “Budgetary Government Domestic Revenue” (2019)

**Property Tax: Collections** Property Tax is the primary source of municipal own-source revenue – accounting for JD139 M (\$196 M) or 76% of the JD182 M (\$257 M) collected by municipalities in 2019. (Other, smaller sources of revenue include fees for garbage collection, small business licensing, and municipal services.) When someone purchases property, municipalities register the new owner as the taxpayer, assess the property to determine the tax, and expect the taxpayer to pay the tax annually. Compliance and enforcement, however, tend to be weak. This leads to low rates of payment (e.g., 50% in 2019 – for areas without SNBN), widening gaps in municipal finances (e.g., JD22 M (\$31 M) unpaid in 2019 adding to JD71 M (\$100 M) in arrears – for areas outside Amman), and dependency on central government transfers (e.g., most municipalities have relatively high indebtedness to finance budget shortfalls).

One of the main reasons for insufficient enforcement is that most municipal authorities do not know where to find property taxpayers for collections. Property registration typically does not include a street address, and the lots and parcels whose details are included tend to be large and unmarked. As a result, most municipalities traditionally take a *passive* approach and charge taxpayers only when they come into the municipality to update their property registration (e.g., in case of a sale) or to seek other services (e.g., licensing a business). This causes arrears to balloon since years (even decades) can elapse between the time when an owner first registers a property and next returns to the municipality for another service. It may also diminish the view that citizens have of their municipality’s capacity to deliver quality services in a timely, predictable, and transparent way.

SNBN is currently enabling three municipalities – GAM, Irbid, and Zarqa – to shift this paradigm by taking an *active* approach to collections which dramatically improves the efficiency and effectiveness of their performance. While each of these cities is doing different things given the varying maturity of their SNBN systems and tax collection capabilities, all are using street addresses to contact taxpayers proactively and personally for collections. For example, Irbid – taking advantage of the SNBN which it has been developing independently over the past five years (approximately) – is adding street addresses to property profiles; generating precise, building-by-building lists of delinquent taxpayers; and sending representatives personally to serve those taxpayers collection notices efficiently and effectively. Zarqa – utilizing and extending a legacy SNBN system in the city center expressly for tax collection (e.g., adding numbers to building with spray paint in advance of formal signage) – is using tablets with location data (including SNBN data whenever available) to make similar site visits for collections. To support such efforts Zarqa has reorganized its Property Tax department into a municipality-based team to serve taxpayers who visit the municipality and a field-based team to reach out personally to delinquent taxpayers. GAM – building on its mature SNBN system and steadily developing its techniques over more than a decade – is redoubling its on-site taxpayer outreach (e.g., converting all positions formerly dedicated to cash handling in the municipality to site visits in the field by changing its policy to accept only online payments) and offering value-added facilitation services such as taxpayer education, mobile phone reminders, and installment payment options.

Several factors have contributed to the exceptional Property Tax collections performance in these three cities, but tax authorities view SNBN as the backbone of their efforts. For example, the passage of the 2015 Decentralization Law and Municipality Law strongly has encouraged Irbid and Zarqa in particular (as the largest cities outside Amman) to become more independent of central government support and finance their own budgets. Also, municipal elections in 2018 have provided new leadership to spearhead these improvements. Finally, the increasing digitization of financial administration through recent investments in systems and growing familiarity among staff has offered vital tools to support improvements. All agree, however, that the precise address data offered by SNBN is the single most critical element which enables these other factors to come together and produce such outstanding results.

The impact of the improvements enabled by SNBN is clear from a comparison of Property Tax collections across municipalities by the end of 2019. As the table below illustrates, GAM achieved



Jordan's highest annual Property Tax collection rate of 71%, while Irbid and Zarqa both achieved rates of 60% – all of which are 10-20 percentage points above the average in areas without SNBN.

**Table 6. Property Tax by Governorate (2019 Tax Year with Collections through October 2020)**

Name	Number of Taxpayers			Tax			
	Family	Commercial	Total	Owed	Collected	% Collected	
Amman	524,354	60,855	585,209	JOD 156,094,326	JOD 110,124,597	71%	
Amman Outside	79,737	16,887	96,624	JOD 5,550,531	JOD 2,614,394	47%	
Irbid	264,033	67,945	331,978	JOD 16,814,542	JOD 10,161,817	60%	
Zarqa'a	182,881	68,496	251,377	JOD 13,709,929	JOD 8,280,892	60%	
Al-Salt	58,202	10,487	68,689	JOD 3,483,075	JOD 1,805,910	52%	
AlMafrq	41,472	8,057	49,529	JOD 2,109,862	JOD 1,045,438	50%	
Jarash	38,577	4,795	43,372	JOD 1,416,315	JOD 579,098	41%	
Ajloun	29,087	3,839	32,926	JOD 719,647	JOD 270,269	38%	
Madaba	27,088	2,453	29,541	JOD 1,497,985	JOD 651,472	43%	
Karak	47,762	12,334	60,096	JOD 2,021,908	JOD 774,476	38%	
Tafielah	17,489	3,235	20,724	JOD 466,295	JOD 142,537	31%	
Ma'an	18,616	5,185	23,801	JOD 981,229	JOD 463,606	47%	
Aqaba	35,190	12,040	47,230	JOD 5,498,301	JOD 2,134,576	39%	
<b>Total</b>	<b>1,364,488</b>	<b>276,608</b>	<b>1,641,096</b>	<b>JOD 210,363,946</b>	<b>JOD 139,049,082</b>		

Source: Ministry of Local Affairs

**Property Tax: Assessment** Municipalities typically have a narrower tax base – and less Property Tax revenue – than they should due to inefficiencies in their registration process. When property owners make changes to their properties (e.g., developing an empty lot into a six-unit apartment building), they must register the change with the Department of Land & Survey (DLS). DLS approves the change, updates its records, and “flags” the property for re-assessment. Municipalities typically allow such cases to accumulate over the course of a year and engage seasonally (e.g., for three months around the same time each year) a “local council” – consisting of a DLS representative (who has the updated record, plus the official parcel and lot numbers to identify the property), a Tax Department representative (who assesses the property), and a local community member (who guides them to find the property and its owner). Once the local council visits the property and verifies the change in its status, the Tax Department representative re-assesses it (i.e., revises its annual Property Tax payment) and registers this change in its database. In the example of the empty lot converting to a six-unit apartment, one tax (higher than the tax for the original empty lot) might be assigned to the owner's unit and five additional taxes (even higher than the landlord's unit) to the rental units. In some cases, municipalities do not complete all the assessments needed in each season. Backlogs accumulate, and owners might wait for multiple years before their properties are reassessed. In the meantime, their properties continue to be taxed in the same way. Returning to our apartment building example, if it takes a local council three years to re-assess the property, then the building will be housing six families, but its owner will continue paying Property Tax as if it were still a vacant lot.

The Assessment team's original, innovative comparative analysis between Property Tax taxpayer registries and electricity utility customer registries indicate this process inefficiency is currently causing 58,940 “missing” Property taxpayers outside Amman. Property owners typically connect electricity and water utilities shortly after their development projects are approved by DLS, and utilities immediately update their customer databases accordingly for service and billing purposes. As a result, the utility company databases are famously comprehensive and accurate – so much so that most municipalities entrust to local utilities the collection of certain municipal fees (e.g., the water utility might collect the municipality's sewage fee, the electricity utility might collect the municipality's garbage collection fee). Up to date electricity utility records show 573,844 active electricity meters within the “greater” municipalities, but MOLA Property Tax records show only 514,904 taxpayers in the same areas – revealing the magnitude of the assessment backlog.



SNBN is currently enabling two municipalities – Irbid and Zarqa – to innovate its assessment process, narrow the gap between eligible and active taxpayers, and broaden their tax base. The Tax Department in these cities addresses immediately (e.g., during the same visit to the municipality by the owner) DLS “flags” by making a *provisional* re-assessment of the property based on its precise street address enabled by SNBN and the current assessments of similar neighboring buildings. The Tax Department charges Property Tax on the basis of this provisional re-assessment while awaiting the site visit to make its formal and final re-assessment – thereby avoiding any foregone revenue. Also, these municipalities are able to make their assessments much more efficiently. They rely on the precise street addresses enabled by SNBN to locate properties in question, instead of a DLS representative equipped with lot and parcel information plus a local guide. As a result, they are able to send one representative from the Tax Department to make the assessment independently at any time of year, instead of a local council of three individuals during a particular season each year. The data clearly demonstrates the impact of these innovations. The difference between electricity customers and property taxpayers in Irbid and Zarqa is only 5% and 2%, respectively – compared to an average of 22% in other cities, except Amman. (Amman is a special case since it is also using SNBN to enhance its assessment practices, but large blocks of extra-legal residences in East Amman which have electricity service but do not yet participate in the property tax system obfuscate this progress and distort its data.) The progress made by Irbid and Zarqa is even more impressive since the population of each city is greater (approximately in the case of Zarqa) than that of all other cities combined, except Amman.

**Table 7. Property Taxpayers vs. Electricity Customers (By City, 2020)**

City	Property Taxpayers	Electricity Customers	"Missing" Property Taxpayers	
			Number	Share
Amman	585,209	856,469	271,260	31.7%
Zarqa'a	157,524	160,974	3,450	2.1%
Irbid	196,287	206,416	10,129	4.9%
Al-Salt	36,270	39,348	3,078	7.8%
Karak	23,857	27,749	3,892	14.0%
Ajloun	12,799	15,338	2,539	16.6%
Jarash	21,717	26,419	4,702	17.8%
Ma'an	9,998	13,285	3,287	24.7%
Tafelah	13,686	18,728	5,042	26.9%
Madaba	23,714	35,525	11,811	33.2%
AlMafrq	19,052	30,062	11,010	36.6%
<b>Total</b>	<b>1,100,113</b>	<b>1,430,313</b>	<b>330,200</b>	<b>23.1%</b>

Source: Ministry of Local Affairs, Electricity Distributors (JEPCO, EDCO, IDECO)

**Income Tax: Collections** According to multiple, consistent – often emphatic – accounts from Income & Sales Tax Department (ISTD) representatives, certain Income Tax processes are inefficient due to the current lack of nationwide SNBN. When ISTD identifies on a tax return the need for an adjustment (typically additional payment), the Income Tax Law No. (38) for 2018 requires it to send *by post* a notice of that adjustment. ISTD uses standard post in cases of smaller amounts owed and registered mail, which is more costly but offers additional tracking services, in cases of larger amounts owed. Since many income taxpayers do not have street addresses because their municipalities do not yet have SNBN, their notices are often rejected as undeliverable. Once these notices are returned to ISTD, it must then take the next step of delivering the notice to the taxpayer by hand. By the time the notice finally reaches the taxpayer, it often happens that the case has already begun to accrue steep penalties (0.4% *per week*) because it has exceeded a 30-day grace period which began when the notice was first sent.

This process is unnecessarily costly in several ways. First, the cost of initial postage on letters which are sent perfunctorily with no street address is wasted since there is little realistic chance that they will be delivered successfully. Second, the cost of delivering those rejected notices by hand is much

more costly than the cost of delivering them effectively by post in the first place. Third, the delays in delivering notices result in late payment penalties charged to taxpayers who are unable to receive their notices properly by post in the first place. Despite being relatively high, these penalties seem unlikely to cover the additional administrative costs of the hand delivery process – as well perhaps the cost of financing through borrowing the amounts owed until they can be collected. This process is so notoriously dysfunctional and costly that large income taxpayers typically send representatives proactively to ISTD offices to collect their own notices personally, in order to avoid waiting for delivery, in order to avoid “automatic” penalties if that delivery runs customarily late.

This process is also unfair to certain taxpayers. The large concentration of Income Tax taxpayers who reside in North and West Amman, which already have SNBN, typically receive their notices on time because they have street addresses. (The fast growing, highly industrialized areas in South Amman do not yet have SNBN and are assumed by ISTD representatives to drive most unsuccessful delivery by post inside Amman.) The higher likelihood of receiving notices is compounded for taxpayers with higher income – and therefore higher Income Tax bills – since ISTD typically sends those notices through the more reliable registered mail service. Furthermore, many of those same higher income taxpayers have post office boxes because they also pay GST, which requires taxpayers to have a post office box to ensure consistent, timely receipt of more frequent (since GST is paid every two months) and consequential (since consequences for late payment of GST – as GoJ’s largest and most vital revenue source – are severe) correspondence, due to ownership of an industrial business. Having a post office box makes the chances of receiving a notice sent by post even higher than having a street address. So, it is smaller taxpayers who live in areas outside of North or West Amman and who do not participate in GST which are disproportionately affected by this costly, inefficient process – compounding well-known, abiding feelings of unfairness felt by those outside of the capital about unequal access to services and benefits enjoyed by those inside.

Data from ISTD about the notices sent in 2019 supports these accounts, but to a lesser extent and in a less clear way than ISTD employees suggested in our KIIs. For example, 10,676 notices sent by standard post or registered mail are returned and need to be delivered personally, which is a significant number, but this represents only 2.4% of the total 449,244 notices sent. Similarly, performance in Amman is consistent with the national average (e.g., 2.6% versus 2.4%), instead of above average given its advantage of a large concentration of taxpayers in an area that already has SNBN. So, additional investigation is required in order to understand fully and therefore address effectively this challenge.

### **Analysis of Measurable Tax Administration Benefits for CBA**


The Assessment Team estimates that nationwide SNBN will generate \$8.9 M annually in measurable benefits based on the improvement in Property Tax collections that could be achieved if all 91 municipalities in the expansion area adopt the same active approach that Amman currently (as well as Irbid and Zarqa increasingly) takes by utilizing the precise street addresses provided by SNBN and achieve similarly high rates of collection. (See Table 8 for more information about this estimate.)

**Table 8. Breakdown of Benefit Estimate: Tax Administration**


Factor	Value	Source
(a) GAM Property Tax collection rate (% owed) (2019)	71%	Ministry of Local Affairs (MoLA)
x (b) Total Property Tax owed (2019)	JD 210.4 million	MoLA
= (c) <i>Pro Forma</i> Property Tax collected assuming GAM collection rate (a x b)	JD 148.4 million	-
- (d) Property Tax collected (2019)	JD 139.0 million	MoLA
= (e) Potential increase in Property Tax collections from existing taxpayers (c – d)	JD 9.4 million	-
x (f) Adjustment for SNBN expansion area (based on population and distribution of taxes by Governorate)	61.0%	GoJ Dept. of Statistics
x (g) Degree of municipality success in applying GAM practices	75%	Assumption for conservatism
x (h) Projected annual population growth rate (2020-40)	1.1% <sup>4n</sup>	GoJ Dept. of Statistics
x (i) Average annual inflation rate (2009-19)	2.5% <sup>4n</sup>	Central Bank of Jordan
/ (j) JD:USD exchange rate	JD 0.71	US Department of the Treasury
<b>= Total Benefit ((e x f x g x h x i) / j)</b>	<b>\$8.9 Million</b>	


### Analysis of Immeasurable Tax Administration Benefits for MCA


The Assessment further estimates moderate immeasurable benefits based primarily on economic and governance impact, plus significant civic and environmental impact from improvements to Property Tax registration and Income Tax collection that SNBN expansion will enable.

 **Economic** The Assessment estimates great economic impact from the improvements to Property Tax registration and Income Tax collection that SNBN expansion will enable. In terms of Property Tax registration, SNBN will enable municipalities to register Property taxpayers immediately, which is at least one year or in some cases many years earlier than the current rate, thereby increasing the tax base and resulting tax revenue. It would be difficult to ascertain the exact amount of Property Tax which municipalities are currently failing to collect from these taxpayers as well as to project how the number of newly registered taxpayers will evolve over time. As of 2019, however, this opportunity amounts to approximately JD7.6 M (\$10.7 M) or 4% of all Property Taxes owed based on almost 60,000 “missing” taxpayers outside of Amman and an average taxpayer assessment of JD128. This suggests a large opportunity today which would likely remain significant going forward.

In terms of Income Tax collection, it is expected that SNBN will lower administrative costs and accelerate collections when following up with tax filers for adjustments and audits. In terms of lower administrative costs, SNBN can help save the cost of wasted postage from thousands of notices which are sent each year as required by current law, but unable to be delivered due to the lack of street addresses as well as the cost of labor by avoiding the personal delivery of notices after delivery by post fails. In terms of faster collections, the ability to deliver notices by post will speed the collections process – helping taxpayers to avoid the cost of penalties which can be incurred during delays in receiving notices as well as helping the GoJ to avoid the cost financing deficits during delays in processing collections. While it is difficult to quantify this impact due to the unavailability of data, the thousands of taxpayers affected each year and the millions of JDs in taxes which are adjusted indicate a significant opportunity.

 **Governance** The Assessment estimates that SNBN expansion can have great impact on governance in the domain of tax administration. Municipalities can more efficiently and effectively assess property, maintain a complete and current registry of taxpayers, and collect taxes from all qualified taxpayers. At the same time, ISTD can more efficiently and effectively follow-up with taxpayers for adjustments and audits. This will help both municipalities and ISTD make their current processes more consistent, orderly, and timely. Furthermore, these improvements will be felt by the majority of Jordanians which participate in the tax system.

 **Civic** The Assessment estimates that SNBN expansion can have moderate impact on civic spirit in the domain of tax administration. Tax authorities in GAM and Irbid expressed during our KIIs that the more timely and comprehensive Property Tax registration which they are enforcing with the help of SNBN causes citizens to feel a stronger sense of fairness and inclusiveness in their cities as well as to boost their confidence and pride in local government. They suggest the latter could be due to greater efficiency and effectiveness of traditional service delivery in the short term as well as greater ability to do more in the long term (i.e., because of a stronger tax base). Similarly, Income Tax authorities in GAM expressed during our KIIs that more timely Income Tax collections which they are conducting with the help of SNBN causes citizens to feel a stronger sense of fairness and inclusiveness nationally as well as to boost their confidence, pride, and trust in central government. Income Tax authorities outside GAM expressed consistently during our KIIs that this is especially likely to be the case for Jordanians outside of Amman – once SNBN reaches them – since they will receive the same treatment as fellow citizens in the capital and avoid systemic late penalties due to shortcomings in governance which has long been points of dissatisfaction for them. Again, these improvements would be felt by the majority of Jordanians which participate in the tax system.

 **Environment** The Assessment estimates that SNBN expansion can have modest impact on the environment in relation to tax administration. This estimate is based primarily on the volume of Income Tax notices sent annually for adjustments and audits (478,000 in 2019) combined with the degree to which travel time by Jordan Post would be reduced when attempting to deliver them to a precise street address instead of more general location description. This estimate is also based on the degree to which personal travel by ISTD staff to hand-deliver notices which failed to be delivered by Jordan Post could be avoided.

## GOVERNMENT SERVICES: CRISIS RESPONSE

The assessment finds that SNBN can be instrumental for efficient, effective crisis response – especially local planning, local service delivery, and individual outreach. During the COVID-19 pandemic GoJ entities – particularly municipalities – have undertaken an unprecedented campaign to combat transmission, including safe control of movement, enhanced neighborhood sanitization, and personal delivery of essentials to the most vulnerable. These experiences have demonstrated the tremendous value when managing crises of the ubiquitous street signage, comprehensive address databases, and accurate Geographic Information System (GIS) maps which SNBN provides. They have also revealed the powerful ways in which effective crisis management boosts civic trust and pride in government.

**Local Planning** SNBN can help designers of geographic restrictions balance safety with access to vital resources. For example, MOLA Acting Secretary General Osama Al Azzam emphasized that municipalities discovered during the first wave COVID-19 transmission that there is a need for detailed maps linked to GIS to create a “smart lockdown” by defining precisely areas targeted for isolation, placing neighborhood entry/exit checkpoints effectively, and determining access within walking distance to essential services (e.g., bakery, pharmacy, water). Similarly, municipalities required population maps linked to street addresses to determine how many new home-based businesses must be licensed to fill gaps in essential service. Finally, community organizations required the same maps to allocate their volunteers appropriately across neighborhoods to deliver services.


**Local service delivery** SNBN allows emergency response teams to reach more citizens faster by optimizing routes through local areas. For example, Jerash leveraged its SNBN to manage increased waste collection efficiently by determining through detailed housing density maps the optimal allocation of bins, frequency of collection, and number of workers for each neighborhood. Jerash followed a similar approach to locate schools more quickly and easily when distributing personal protective equipment to students taking high school examinations (“Tawjihi”). Irbid and Ajloun took


advantage of their SNBN and used detailed neighborhood maps to increase the efficiency of their sanitization campaigns.


**Individual Outreach** SNBN also enables crisis response teams to pinpoint individual beneficiaries incomparably quickly, accurately, and independently. During full lockdown, citizens were forbidden to leave home, and service providers therefore had to respond to their basic needs. Epidemiological investigation teams located infected individuals and traced others who had come into contact with them. The Civil Defense Directorate (CDD) located and transported infected individuals to health centers, plus delivered life-saving medicine and treatment to individuals suffering from chronic illness. The National Aid Fund (NAF) visited the vulnerable personally to enroll them for cash assistance benefits and deliver food packages. Municipalities performed these functions with notably different degrees of efficiency and effectiveness based on the extent of their SNBN. For example, Ministry of Health Director of Crisis Management Dr. Haitham Al-Douiri explained that municipalities with SNBN reported approximately 95% success in reaching targeted individuals. In Irbid, SNBN was essential for military forces from outside the city to locate citizens directly – despite not being familiar with the area – and provide them with critical services. By contrast, Karak faced challenges without SNBN to find specific buildings which required sanitization and often spent as much as an hour asking directions from individuals on the street. Similarly, Jerash and Ajloun noticed a stark contrast between reaching individuals quickly in areas with SNBN versus spending up to 45 minutes searching for them in areas where SNBN has not yet been implemented.

### **Analysis of Immeasurable Crisis Response Benefits for MCA.**

The Assessment estimates greatest immeasurable benefits based on strong economic, governance, and civic impact as well as modest environmental impact from the greater efficiency and effectiveness which nationwide SNBN makes possible for government services at times of crisis.


 **Economic** The Assessment estimates that nationwide SNBN could have very great economic impact during times of Crisis Response for five main reasons. First, precise street addresses and more detailed population density maps enable government to deliver services to both neighborhoods (e.g., sanitization) and individuals (e.g., contract tracing) more efficiently – thereby saving time and labor cost. Second, faster travel through (e.g., route optimization) and to (e.g., foodstuff delivery) destinations means less vehicle cost (e.g., fuel, maintenance). Third, detailed population density maps enable more detailed neighborhood investment planning for vital, local services in preparation for stay-in-place situations – leading to local economic development through additional local (e.g., license for new bakery in places where there is not one within walking distance) and home-based businesses. Fourth, better crisis response tends to help local residents be more productive and economically active – thereby stimulating the economy overall. Fifth and finally, as described in the Emergency Services: Medical section, faster response times to medical emergencies can save lives and prevent disability or lengthy, expensive recoveries from illness. In cases of crisis (particularly health crises such as the COVID-19 pandemic), the precise street addresses and more detailed GPS maps supported by SNBN can help a variety of government services reach people in dire need faster.

 **Governance** The Assessment estimates that SNBN expansion would have very great governance impact in the domains of Crisis Response, Emergency Services, and Public Safety for similar reasons. These three critical government services would each benefit by responding more rapidly and effectively to citizens in need – providing services they vitally need and (in arguably the ultimate test of good governance) preserving their very lives.

 **Civic** The Assessment estimates that nationwide SNBN would have very great civic impact in the domains of Crisis Response, Emergency Services, and Public Safety for similar reasons. Improved performance by government services in response to emergencies, disasters, and crime – particularly in cases where lives are saved – would build the confidence and trust of Jordanian citizens in their government and society. Although relatively few people find themselves in these



extraordinary situations and receive such services directly, stories about them are widely told and resonate strongly with the broader public.

 **Environment** The Assessment team estimates that SNBN expansion would have modest impact on the environment in the domain of Crisis Response based on the volume of crisis missions combined with the degree to which travel time by crisis responders would be reduced due to more accurate location information about their destinations.

## GOVERNMENT SERVICES: EMERGENCY

The Assessment finds that nationwide SNBN would help Jordan's CDD and other providers to deliver emergency medical and fire services more effectively and efficiently – achieving better outcomes while saving significant cost – by enabling quicker response to emergency calls. In terms of emergency medical services (i.e., ambulance), quicker response can enable CDD to save each year dozens of additional lives in potentially fatal cases and achieve better, faster outcomes with lower healthcare costs in less serious cases. In terms of emergency fire services, quicker response times can enable CDD to prevent each year property damage worth millions of JDs. Finally, in terms of the CDD emergency vehicle fleet, shorter, quicker trips will reduce fuel costs and wear-and-tear on ambulances, fire trucks, and other vehicles.

***Quicker Response Time*** Rapid response to calls received by Jordan's centralized "911" emergency line is an obvious priority for CDD, but also a perennial challenge. Given the lack of SNBN in most areas, emergency callers and CDD must usually utilize (in cases when emergencies occur within or near buildings rather than on open roadways) the traditional combination of landmarks, geolocation markers, and street-level searching in the "last mile" (e.g., asking locals, scanning visibly for the other party) to help a CDD team to reach the location of the emergency. In non-emergency situations (e.g., receiving a delivery), this relatively inefficient means of navigation, which requires both parties to engage in multiple rounds of communication to find one another, is ordinarily somewhat difficult and causes delays; in emergency situations, however, it can be impossible (e.g., if emergency callers are also emergency victims) and lead to tragedy.

CDD has worked successfully over the past 10-15 years to address this challenge, and SNBN has emerged as a significant factor in accelerating emergency response. CDD has taken four steps to reach the locations of emergencies faster. First, it has increased throughout the Kingdom the number of its stations to reduce the distances it needs to travel to reach emergencies. Second, it has increased its workforce to avoid personnel bottlenecks when responding to emergencies. Third, it has increased the size of its emergency vehicle fleet to avoid transportation bottlenecks when responding to emergencies. Fourth and finally, it has incorporated into its systems in GAM the precise street address provided by SNBN to improve the way it identifies and finds emergency locations there. A panel of seven CDD operations experts agree that these measures together enabled CDD to reduce its average response times in GAM (i.e., where all four of these factors have been applied) by 30% within the approximate timeframe of 2006-16. The panel further agreed that approximately 20% of this improvement can be attributed to the addition of SNBN, while the other three factors have been responsible in equal measure for the remaining 80 percent. The panel noted that taking advantage of SNBN in GAM has been especially helpful for CDD since its personnel frequently respond to emergencies in areas with which they are not personally familiar. CDD has already increased its number of stations, emergency responders, and vehicles throughout the Kingdom, but nationwide expansion of SNBN would enable it to reduce its response time in those areas by an additional 8-10% – in the same way it has already done in GAM.



**Table 9. CDD Emergencies by Governorate (2019)**

Governorate	Total Cases	Average Response Time (Seconds)
East Amman	133,865	637
West Amman		609
Az-zarqa	41,834	561
Madaba	11,096	569
Balqa	21,254	554
Al Karak	26,998	466
Al Tafilah	6,653	475
Ma'an	8,772	496
Aqaba	11,805	457
Irbid	67,777	540
Mafraq	16,050	531
Ajloun	10,100	552
Jerash	8,857	595
<b>Sum or Average</b>	<b>365,061</b>	<b>542</b>

Source: Directorate of Civil Defense, Annual Report 2019

**Medical** Shorter emergency response time is strongly linked with better patient health outcomes as well as lower societal and healthcare costs.<sup>6</sup> In life-threatening situations, academic and industry literature uniformly concludes that one of the most important factors in reducing mortality (and associated societal costs) is the time it takes for “first responders” to arrive since there is a measurable effect on survival for every minute of delay.<sup>7</sup> This literature otherwise ranges widely, however, and it is challenging to find a single, broadly applicable, reliable guideline because of numerous factors, such as the focus of different studies on particular conditions (e.g., cardiac incidents), data limitations (e.g., variabilities in underlying emergency dispatch processes, different practices for counting cases in which patients die before reaching the hospital), and failure to correct for confounding factors (e.g., emergency medical technician experience level).<sup>8</sup> The latest, most sophisticated effort to determine single, broadly applicable, reliable guideline concludes that the probability of one-year mortality increases at the rate of 1.26% per minute of delay in response – meaning that every minute does indeed make a significant, measurable difference in saving lives.<sup>8</sup> Similarly, in non-life-threatening situations, healthcare and personal costs for survivors are also greatly impacted by response times.<sup>9</sup> For example, if an emergency victim’s condition becomes more serious due to a delay in response, then it may require a longer stay and more intensive care in the hospital and/or a procedure that could otherwise have been avoided. Similarly, it may require a longer recovery, including more time away from work, in the short term as well as a lower quality of life or a disability, including the inability to work, over the long term which might otherwise have been avoided.

In 2019, CDD received more than 365,000 emergency calls with over 7,200 associated fatalities and 318,000 injuries. In the life-threatening cases (i.e., potentially resulting in fatality) to which CDD responds, an incremental 8-10% reduction in arrival time due to the nationwide expansion of SNBN combined with the estimated change in mortality outcomes per minute of faster response could save almost 30 additional lives each year. In the non-life-threatening cases to which CDD responds (i.e., potentially resulting in injury), it is more difficult to measure accurately the difference that an incremental 8-10% reduction in arrival time would make given their more varied and complex

<sup>6</sup> RapidSOS, “Outcomes: Quantifying the Impact of Emergency Response Times,” p. 3

<sup>7</sup> Ibid. pp. 12-16

<sup>8</sup> Wilde, “Do Emergency Medical System Response Times Matter For Health Outcomes?” (2012), p. 795

<sup>9</sup> RapidSOS, “Outcomes: Quantifying the Impact of Emergency Response Times,” p. 17-20

nature, but it is safe to assume that it would result in a significant improvement in health outcomes and reduction in healthcare costs.

**Fire.** Faster emergency response is also crucial for firefighting since more property damage can be prevented the sooner firefighting can begin. It is challenging to predict how quickly a fire will develop since no two fires are the same (e.g., cause, building materials) and fire growth tends to be volatile.<sup>10</sup> There is consensus, however, on two consistent factors. First, uncontrolled structural fires tend to grow relatively quickly – by one credible estimate doubling in volume every 30-60 seconds during the initial stages of growth.<sup>11</sup> Second, the growth curve for uncontrolled structural fires is non-linear. A fire tends to grow in a linear fashion during its initial “incipient” and “growth” stages, but then grows dramatically in a non-linear fashion from the “growth” stage to the “fully developed” stage at a critical juncture known as “flashover.”<sup>12</sup> During a fire’s “incipient” and “growth” stages, it is relatively easy to extinguish the fire and prevent extensive property damage. Once a fire becomes fully developed after flashover, however, it reaches its peak temperature and destructive force – making it much more difficult to extinguish and prevent property damage. This being the case, reducing emergency response times so firefighters arrive before fires become fully developed is critical – every minute counts.

Jordan incurs approximately JD35 M (\$49 M) of fire damage each year.<sup>13</sup> An 8-10% reduction due to the nationwide expansion of SNBN in the time that CDD arrives to fight fires could save a significant amount of property annually – even based on a conservative estimate (i.e., entirely linear fire growth) of property damage prevention per minute of faster response.

**Vehicles** Faster, shorter trips to medical and fire emergencies will result in proportionally less mileage, fuel, and maintenance each year for CDD ambulances, fire trucks, and other emergency vehicles.

### Analysis of Measurable Emergency Services Benefits for CBA

The Assessment Team estimates that nationwide SNBN will generate a total of \$28.0 M annually in measurable benefits in the domain of Emergency Services. This is comprised of \$25.4 M for the value of lives saved in near-fatal accidents due to faster response times for Emergency Medical services, \$2.5 M in property loss prevented due to faster response times for Emergency Fire services, and \$0.1 M in vehicle savings corresponding to lower utilization due to shorter, faster trips in response to all Emergency calls. (See Tables 10-12 for more information about this estimate.)

**Table 10. Breakdown of Benefit Estimate: Emergency Services – Medical**

Factor	Value	Source
(a) Emergency response fatalities per year (2019)	7,249	Civil Defense Directorate (CDD)
x (b) Adjustment for addressable (i.e., non-highway) fatalities	90.0%	CDD
x (c) Adjustment for SNBN expansion area (based on population and distribution of emergencies by Governorate)	44.1%	CDD, Goj Dept. of Statistics, CITIES
x (e) Estimated response time reduced due only to SNBN	0.7 minutes	CDD
x (f) Percentage reduction in deaths per minute of faster response	1.26%	Wilde ET. Health Econ. 2013 Jul
= (g) Number of lives saved due to faster response time (a x b x c x d x e x f)	26	-
x (h) Average statistical value of a life (SVL) in Jordan	\$0.7 million	World Bank, Report No: PAD2370, p.30 Viscusi & Masterman (2017), p.246
x (i) Projected annual population growth rate (2020-40)	1.1% <sup>n</sup>	Goj Dept. of Statistics
x (j) Average annual inflation rate (2009-19)	2.5% <sup>n</sup>	Central Bank of Jordan
<b>= Total Benefit (g x h x i x j)</b>	<b>\$25.4 Million</b>	

<sup>10</sup> RapidSOS, “Outcomes: Quantifying the Impact of Emergency Response Times,” p. 21

<sup>11</sup> National Fire Protection Association, “Fire Loss in the United States During 2014” (2015)

<sup>12</sup> Hartin, “Fire Development and Fire Behavior Indicators”

<sup>13</sup> Jordan Insurance Federation, “Annual Report, Insurance Business in Jordan, 2017” (2018), p. 4

**Table 11. Breakdown of Benefit Estimate: Emergency Services – Fire**

Factor	Value	Source
(a) Average annual fire property damage (2016-17)	JD 34.1 million	Jordan Insurance Federation
x (b) Adjustment for SNBN expansion area (based on population and distribution of emergencies by Governorate)	44.1%	CDD, GoJ Dept. of Statistics, CITIES
x (c) Estimated reduction in response time due only to SNBN	8.0%	CDD
x (d) Projected annual population growth rate (2020-40)	1.1% <sup>4n</sup>	GoJ Dept. of Statistics
x (e) Average annual inflation rate (2009-19)	2.5% <sup>4n</sup>	Central Bank of Jordan
/ (f) JD:USD exchange rate	JD 0.71	US Department of the Treasury
<b>= Total Benefit<sup>1</sup> ((a x b x c x d x e) / f)</b>	<b>\$2.5 Million</b>	

**Table 12. Breakdown of Benefit Estimate: Emergency Services – Vehicles**

Factor	Value	Source
(a) Fuel and maintenance for emergency response vehicles (2018)	JD 1.4 million	Ministry of Finance
x (b) Adjustment for SNBN expansion area (based on population and distribution of emergencies by Governorate)	44.1%	CDD, GoJ Dept. of Statistics, CITIES
x (c) Estimated reduction in response time due only to SNBN	8.0%	CDD
/ (d) JD:USD exchange rate	JD 0.71	US Department of the Treasury
<b>= Total Benefit ((a x b x c) / d)</b>	<b>\$0.1 Million</b>	


## Analysis of Immeasurable Emergency Services Benefits for MCA

The Assessment estimates greatest immeasurable benefits based on strong economic, governance, and civic impact as well as modest environmental impact from the faster, more effective response which nationwide SNBN makes possible for Emergency Medical and Fire Services. (In the case of the economic criterion, only cases of non-life-threatening emergencies are addressed since both life-threatening emergencies and vehicle savings have already been covered by the CBA.)

**Economic** The Assessment team estimates that SNBN expansion would continue to have very great economic impact in the domain of Emergency Medical Services – even when focused only on the response to emergency calls in non-life-threatening situations. Out of the approximately 365,000 emergency calls which the CDD received in 2019, almost 320,000 involved injuries. These include thousands of situations in which small differences in response time can make a big difference in the outcome for the victim, such as more than 2,000 cases of stroke, almost 1,000 cases of choking, and almost 9,000 cases of wounds. The quality of this reporting is not detailed enough to make a precise estimate (e.g., more than 200,000 cases are recorded as “Other” medical cases), but the combination of the high volume of cases with the high cost of incremental medical care as well as short- and long-term disability indicates that this impact will be among the greatest within this consideration set.

**Governance** (*Entry repeated from Crisis Response section*) The Assessment estimates that SNBN expansion would have very great governance impact in the domains of Crisis Response, Emergency Services, and Public Safety for similar reasons. These three critical, highly visible government services would each benefit by responding more rapidly and effectively to citizens in need – providing services they vitally need and (in arguably the ultimate test of good governance) preserving their very lives.

**Civic** (*Entry repeated from Crisis Response section*) The Assessment estimates that nationwide SNBN would have very great civic impact in the domains of Crisis Response, Emergency Services, and Public Safety for similar reasons. Improved performance by government services in response to emergencies, disasters, and crime – particularly in cases where lives are saved – would build the confidence and trust of Jordanian citizens in their government and society. Although relatively few people find themselves in these extraordinary situations and receives such services directly, stories about them are widely told and resonate strongly with the broader public.


 **Environment** The Assessment team estimates that SNBN expansion would have modest impact on the environment in the domains of Emergency Services and Public Safety based primarily on the volume of emergency calls combined with the degree to which travel time by CDD and PSD first responders would be reduced due to more accurate location information about their destinations. This estimate is also based in the case of Emergency Services on the reduced amounts of water required to fight fires which are smaller because CDD reaches them sooner.


## GOVERNMENT SERVICES: PUBLIC SAFETY


The key informant interview with the Public Security Department (PSD) suggests that SNBN enables an improvement in public safety through an increase in police capacity and reduction in response time. PSD receives approximately 25,000 calls each day – a significant share of which are emergencies to which it responds on site. PSD often encounters challenges when locating those emergencies in cities without comprehensive, systemic SNBN. For example, both Zarqa and Irbid have streets with the same names which causes confusion. In many cases, callers provide PSD with a location in relation to a landmark or well-known building, such as a pharmacy or mosque. With municipality-wide street addresses and more detailed, accurate GIS maps, callers could share their locations more accurately, which in turn would allow police to arrive more quickly to the emergency. For example, PSD estimated that its response time to emergency calls in Amman has been reduced by two-thirds since the implementation of SNBN there. PSD is currently observing a maximum response time of seven minutes and aiming to reduce this further. Such enhancements in capacity and improvements in responsiveness are contributing to the public's growing confidence, trust, and pride in PSD. In addition, faster, shorter trips to emergencies result in proportionally less mileage, fuel, and maintenance each year for police vehicles.

### Analysis of Immeasurable Public Safety Benefits for MCA


The Assessment estimates great immeasurable benefits based primarily on governance and civic impact, plus moderate economic and modest environmental impact from the greater efficiency and effectiveness which nationwide SNBN makes possible for the PSD in responding to the estimated 25,000 calls it receives each day.

 **Economic** The Assessment estimates that SNBN expansion would have moderate economic impact in the domain of Public Safety for two main reasons. First, faster, shorter trips by PSD in response to calls will yield cost savings from lower consumption of fuel and less maintenance due to less mileage. PSD has already experienced a two-thirds response time reduction in Amman thanks to SNBN. So, it is safe to assume that the combination of its presumably large fleet (given Jordan's approximately 50,000 law enforcement officers) and equally significant time savings in SNBN expansion areas will translate into material – albeit not especially large, as we have seen in the Emergency Services CBA – vehicle cost savings. Second, the Assessment team *assumes* that faster response times will lead to savings through the incremental avoidance of property loss due to theft and personal harm due to violence. Since PSD does not publish incident data (unlike CDD), the Assessment team is not able to confirm these hypotheses or quantify this impact, but believes it is reasonable to assume at least moderate impact based on the very high volume of calls and the very high value recognized in life savings cases.

 **Governance** (*Entry repeated from Crisis Response section*) The Assessment estimates that SNBN expansion would have very great governance impact in the domains of Crisis Response, Emergency Services, and Public Safety for similar reasons. These three critical, highly visible government services would each benefit by responding more rapidly and effectively to citizens in need – providing services they vitally need and (in arguably the ultimate test of good governance) preserving their very lives.

 **Civic** (*Entry repeated from Crisis Response section*) The Assessment estimates that nationwide SNBN would have very great civic impact in the domains of Crisis Response, Emergency

Services, and Public Safety for similar reasons. Improved performance by government services in response to emergencies, disasters, and crime – particularly in cases where lives are saved – would build the confidence and trust of Jordanian citizens in their government and society. Although relatively few people find themselves in these extraordinary situations and receives such services directly, stories about them are widely told and resonate strongly with the broader public.


 **Environment** *(Entry repeated from Emergency Response section)* The Assessment team estimates that SNBN expansion would have modest impact on the environment in the domains of Emergency Services and Public Safety based on the volume of emergency calls combined with the degree to which travel time by CDD and PSD first responders would be reduced due to more accurate location information about their destinations.


## GOVERNMENT SERVICES: LAND & SURVEY


In its key informant interview the Department of Land & Survey (DLS) asserted that SNBN should be a national priority since it lays the groundwork for benefits in multiple sectors. For example, the creation of a unified address database is an essential step toward richer information and statistics which could be used by multiple stakeholders. Currently, the lack of a unified address database forces entities to collect information from different sources. International evidence suggests that the development of a national database or address directory is an essential tool to have the necessary and relevant information – population, infrastructure, and facilities – in and of itself, as well as to inform urban management and investment planning. With a better understanding of the population, facilities, and services, local and national governments can responsibly invest to address service gaps.

### Analysis of Immeasurable Land & Survey Benefits for MCA

The Assessment estimates modest immeasurable benefits based on a balanced combination of governance, economic, and civic impact from the improvements in land management and local development which nationwide SNBN makes possible for DLS.

 **Economic Impact** The Assessment team estimates that SNBN expansion would have moderate economic impact primarily due to incremental investments which will result in improved planning which DLS is able to conduct using more detailed maps. The creation of a national address database, which links to information about population and infrastructure, would further enhance DLS planning effort and could drive even greater incremental investment. The experiences with SNBN of more than 10 developing countries surveyed by the World Bank Report entitled “Street Addressing and the Management of Cities” (p. 24) suggest that SNBN information has often been leveraged successfully by local and national governments to better inform investment opportunities and thereby address service gaps. Furthermore, international experiences in Australia, Denmark, and the United Kingdom indicate the feasibility and potential effectiveness of national address databases. The combination of this international evidence and the large scale of potential investment opportunities justifies this moderate ranking.

 **Governance** The Assessment team estimates that SNBN expansion would have great governance impact in the area of land and survey based on the way in which it can enable dramatic improvement in land management nationwide. Both local and national governmental organizations, including municipalities and DLS, would be much better able to conduct neighborhood planning and address service gaps as well as identify and pursue a wide range of investment opportunities which could enhance the quality of citizens’ lives.

 **Civic** The Assessment estimates that SNBN expansion could have modest civic impact in the area of land and survey due to the confidence that citizens feel in their government and society in response to improvements in local planning and economic development.

## UTILITY SERVICES: WATER

The assessment finds that SNBN expansion will enable water utility concessionaires to preserve natural resources and lower costs by reducing losses of water while facilitating customer billing and network maintenance.

Jordan suffers from excessive pressure on its water resources and infrastructure. In addition to being a water scarce country, Jordan “loses” (i.e., water supplied that is not paid for) approximately half of its water for a variety of reasons, including leakage during distribution. All of Jordan’s water distribution utility companies – Miyahuna, Yarmouk Water Company, Water Authority of Jordan (WAJ), Aqaba Water (AW) – believe that nationwide SNBN will enable faster response to customer calls about service interruptions (i.e., leaks from broken infrastructure) and therefore reduce such losses significantly – saving up to 280,000 cubic meters of water annually. Like their counterparts in the electricity sector, water utilities also believe nationwide SNBN will also make monthly meter reading and billing more efficient through route optimization as well as reduce new service connection times through faster customer location – contributing to additional cost savings. Jordan’s status as a water-scarce country means all such water-saving measures have an exponential impact on an essential resource.

**Background** Water scarcity is one of Jordan’s greatest challenges and development priorities. Jordan’s water sector is characterized by severe scarcity (e.g., annual renewable resources of less than 100 cubic meters per capita are far below the 500 cubic meters per capita global threshold for severe water scarcity) combined with increasing demand due to high population growth, hosting several influxes of refugees, and economic development needs. “Non-revenue water” (i.e., water sent into the distribution system but not billed) is one of the major issues affecting the supply of water for domestic and other uses – placing further strain on this already scarce resource. Non-revenue water can be due to “physical” losses (e.g., leaks in the system from service connections to the meter due to faulty equipment/pipes and/or inadequate maintenance) as well as “commercial” losses (e.g., customer metering inaccuracies, systematic data handling errors in meter reading and billing processes, unauthorized consumption). According to the “National Water Strategy of Jordan, 2016-25,” approximately 52% of water supplied each day is unaccounted for due to such losses. The Strategy proposes reducing non-revenue water to 25% nationally by 2025. Underscoring the importance of these efforts, the USAID/Jordan “Inclusive Growth Diagnostic” identifies water scarcity as one of Jordan’s major constraints to growth and suggests that water-intensive economic activities (e.g., manufacturing, mining) are growing more slowly than other sectors (e.g., retail, communication) because water supply is frequently insufficient. Furthermore, USAID/Jordan’s 2020-25 CDCS includes “Jordan’s Ability to Improve its Water Security Strengthened” as a Development Objective with “Water loss in the system reduced” and “Ability of the water sector to plan, govern and manage its own operations improved” as intermediate results.

**Service Interruption Call Facilitation and Physical Loss Reduction** Water utilities frequently dispatch service teams to customer locations to repair interrupted connections due to network damage. Data from the Ministry of Water and Irrigation’s “Unified Complaints Centre” (below) indicates there will be more than 260,000 such calls from customers in 2020.



**Table 13. Customer Calls for Water Service Interruption (Jan-Oct 2020, By Governorate)**

Governorate	Total Customer Calls for Service Interruption		Average Response Time (Jan-Oct 2020, Minutes)
	Jan-Oct 2020 (Actual)	Full Year 2020 (Pro Forma)	
Amman	77,706	93,247	114
Zarqa'	41,812	50,174	114
Madaba	8,447	10,136	120
Balqa'	43,307	51,968	168
Ma'an	3,258	3,910	168
Karak	8,669	10,403	930
Tafileh	1,238	1,486	138
Aqaba	6,630	7,956	60
Irbid	23,165	27,798	198
Jerash	3,854	4,625	90
Ajloun	3,986	4,783	60
Ma'raq	2,068	2,482	354
<b>Sum or Average</b>	<b>224,140</b>	<b>268,968</b>	<b>210</b>

Source: Ministry of Water & Irrigation, Unified Complaints Centre

On each of these occasions – as in the Electricity sector, customer call center operators, service team dispatchers, and service teams themselves work together to locate a customer – and usually face numerous challenges along the way. In most cases, multiple utility team members must interact with customers multiple times to determine their location through a combination of landmarks, geolocation markers – even standing outside to “flag down” the crew.

The precise street addresses and detailed GIS maps enabled by SNBN make it possible for customer locations to be identified and reached independently and much more quickly. For example, official data from the Unified Complaints Centre indicate there was a 19% reduction in GAM between 2006 (i.e., before its upgraded SNBN system) and 2016 (i.e., after its upgraded SNBN system) in the response time to customer calls for service interruptions. Miyahuna, the distributor for GAM, Madaba and Zarqa, reports that approximately one-third (32.5%) of this reduction in response time was due to SNBN and the systems improvements which it enabled. Miyahuna has its own database of customer locations which was traditionally based on local landmarks. Maintenance teams often complemented this location information with geo-locations received from customers through WhatsApp. With the introduction of SNBN in GAM, Miyahuna added precise street addresses and updated GIS maps to its database and began using them – instead of local landmarks – as its primary reference for locating customers. Miyahuna attributes the rest (67.5%) of the reduction of its response time in GAM between 2006-16 to three factors independent of SNBN, namely a change in management, growth in its workforce, and enhancements to its corporate governance. Based on these experiences, Miyahuna estimates that SNBN alone can drive approximately 7% response time reduction in areas that receive SNBN for the first time. By contrast, the Water Authority of Jordan (WAJ) estimates a greater potential response time reduction of 20% based on its experience in the Governorate of Karak – establishing a range for potential improvement depending on the starting point for each distributor. These faster response times result not only in labor cost savings since utility team members spend less time on each service call, but also physical loss reductions since they are able to locate leaks more quickly for repair and stanch the flow of water sooner.

**New Connection Call Facilitation** Water utilities also frequently dispatch service teams to customer locations to establish new water connections for their homes or businesses. For example, WAJ established approximately 1,000 new connections in the Governorate of Karak in 2019. Distributors process these new connection calls in the same way as the service interruption calls described above – and face the same challenges in the absence of SNBN. As a result, the expansion of SNBN will reduce their response times by a similar 7-20%.

**Meter Reading Optimization** Like the electricity sector, a water utility employee visits each home and business each month to read its water meter and issue a paper bill for the water that has been used since the last meter reading. Such monitoring of individual consumption is labor intensive. For example, WAJ currently employs 30 meter readers to cover the Governorate of Karak which serves only ~4% of all subscribers in Jordan. (This implies approximately 750 meter readers across all water utilities.) Also like the electricity sector, achieving and maintaining efficiency in meter reading is currently challenging in most places. Individual meter readers visit the same areas each day of each month and thereby become intimately familiar with their coverage areas, but it takes numerous months of trial and error to perfect their routes. Furthermore, numerous factors (e.g., new customer additions, staff absences, staff turnover) consistently complicate regular patterns and make it difficult to maintain the efficiencies they have created. Miyahuna is already addressing these challenges by linking all subscriber meters to buildings identified on aerial maps. SNBN expansion will improve the accuracy of this system by providing an additional “layer” of information but likely make only a marginal improvement in meter reading efficiency. By contrast, WAJ believes SNBN will create a step change in meter reading efficiency by using precise street addresses and detailed GIS maps to optimize routes continually. WAJ estimates this shift will make meter readers up to 25% more productive than they are today. These perspectives establish a range for potential improvement depending on the starting point for each distributor.

**Vehicles** Faster, shorter trips for electricity and water meter reading and service visits will result in proportionally less mileage, fuel, and maintenance each year for utility vehicles.

### Analysis of Measurable Water Utility Benefits for CBA

The Assessment estimates that SNBN expansion will generate a total of \$1.1 M annually in measurable benefits in the domain of water utility services. This is comprised of \$0.9 M in labor cost savings due to the reduction in response time for service interruption calls as well as \$0.2 M in cost savings due to the reduction in distribution losses. (See Table 14 for more information about this estimate.)

**Table 14. Breakdown of Benefit Estimate: Utility Services – Water**

#### Reduction in Time for Service Interruption Calls

Factor	Value	Source
(a) Projected number of service interruption calls (2020, Calendarized from Jan-Oct)	268,968	Central Complaints Center (CCC)
x (b) Adjustment for SNBN expansion area (based on population and distribution of service calls by Governorate)	46.2%	CCC, GoJ Dept. of Statistics, CITIES
x (c) Average response time	210 minutes	CCC
x (d) Estimated reduction in response time due only to SNBN	14%	Miyahuna, WAJ
x (e) Service interruption team cost per hour	JD 7.95	Miyahuna, WAJ
<b>= (1f) Subtotal Benefit (a x b x c x d x e)</b>	<b>JD 0.4 Million</b>	

#### Reduction in Distribution Losses


Factor	Value	Source
(a) Projected number of service interruption calls (2020, Calendarized from Jan-Oct)	268,968	Central Complaints Center (CCC)
x (b) Adjustment for SNBN expansion area (based on population and distribution of service calls by Governorate)	46.2%	CCC, GoJ Dept. of Statistics, CITIES
x (c) Average response time	210 minutes	CCC
x (d) Estimated reduction in response time due only to SNBN	14%	Miyahuna, WAJ
x (e) Average water loss per hour from broken pipe (25mm)	2.6 cubic meters	Miyahuna, Sector expert
(f) Water saved due to SNBN (a x b x c x d x e)	69,000 cubic meters	-
(g) Average blended water tariff – Domestic	JD 1.44 / cubic meter	Miyahuna
<b>= (2h) Subtotal Benefit (f x g)</b>	<b>JD 0.1 Million</b>	


## Total


Factor	Value	Source
(1f) Subtotal Benefit	JD 0.4 Million	
(2h) Subtotal Benefit	JD 0.1 Million	
x (a) Projected annual population growth rate (2020-40)	1.1% <sup>an</sup>	GoJ Dept. of Statistics
x (b) Average annual inflation rate (2009-19)	2.5% <sup>an</sup>	Central Bank of Jordan
/ (c) JD:USD exchange rate	JD 0.71	US Department of the Treasury
<b>Total Benefit</b> (((1f+ 2h) x a x b) / c)	<b>\$1.1 Million</b>	


## Analysis of Immeasurable *Water Utility* Benefits for MCA

The Assessment estimates moderate immeasurable benefits in the Water Utilities sector based on strong civic impact as well as moderate governance and environmental impact from the more efficient response to service calls and general management of water infrastructure which nationwide SNBN makes possible. (In the case of the economic criterion, only efficiencies in response to calls for new service connections and the optimization of daily meter reading routes as well as the associated vehicle and customer savings are addressed since efficiencies in response to service interruption calls have already been covered by the CBA.)

 **Economic** The Assessment team estimates that SNBN expansion will have modest economic impact in the Water Utilities sector due to a number of factors, namely labor cost savings from daily meter reading optimization and faster response to calls for new service connections as well as vehicle and customer time savings associated with faster response to all kinds of service calls. On the one hand, the volumes and frequencies associated with the sector are high. The Assessment estimates in 2020 approximately 25,000 service calls for new connections and almost 300,000 service calls of all kinds (approximately 12,000 and 125,000 of which, respectively, would occur in the SNBN expansion area) as well as 750 meter readers working daily. On the other hand, efforts to quantify very similar opportunities (i.e., meter reading and new service connections in the Electricity Utilities sector, vehicle savings in the Emergency Services sector) yielded relatively modest (e.g., approximately \$1.0 M) benefits. In addition to these savings, it is important to note that a hidden cost of service calls in areas without SNBN areas is the extensive time that is required of the customer to participate – since the utility typically cannot find the location without someone to guide them actively. It is challenging to determine how much time customers spend in this way, let alone to value that time. Based on the simple assumptions of customers spending approximately one hour on each of the approximately 137,000 service calls that are made within the SNBN expansion area and value that hour at JD10 per hour (based on current average monthly salaries), the Assessment team estimates an incremental impact of \$1-2 M. While this benefit is material, it will likely not be sufficient for SNBN expansion to have more than modest economic impact in this sector.

 **Governance** The Assessment team estimates that nationwide SNBN would moderate governance impact through Utility Services. Both Water and Electricity distributors will be better able to provide services to citizens – including both new and existing customers – and help satisfy their basic needs. In addition, Water and Electricity distributors will be able to manage more efficiently and effectively critical infrastructure and vital natural resources.

 **Civic** The Assessment estimates that SNBN expansion would have great civic impact through Utility Services. The improved ability of Water and Electricity distributors to provide the vital services on which Jordanians rely every day would build their confidence, trust, and pride in their government and society.

 **Environment** The Assessment estimates that SNBN expansion would have moderate impact on the environment through Water Utility Services based on the combination of the relatively high volume of field visits by Water distributors and the significant degree to which their travel time

to customer locations is reduced through more accurate location information as well as the way in which these distributors more efficiently and effectively manage Jordan's vital water resources.

## UTILITY SERVICES: ELECTRICITY

The assessment finds that SNBN expansion will enable electricity utility concessionaires to lower costs by facilitating network maintenance and customer billing as well as reducing losses of electricity. All of Jordan's electricity distributors – Jordan Electric Power Company (JEPCO), Electricity Distribution Company (EDCO), Irbid Electricity Distribution Company (IDECO) – believe nationwide SNBN will facilitate monthly meter reading and billing as well as expedite connections for new customers and response to service interruption for existing customers. In addition, they believe SNBN will reduce “commercial losses” (e.g., theft) through more rapid, accurate detection.

**Meter Reading Optimization.** An electrical utility employee visits each home and business each month to read its electrical meter and issue a paper bill for the power that has been used since the last meter reading. Electrical utilities are adopting and investing increasingly in “smart meter” technology, but currently focusing only on monitoring transmission infrastructure. So, monitoring distribution to individual consumers remains labor intensive.

For example, the Electrical Distribution Company (EDCO) which serves the Jordan Valley region and distributes approximately 18% of the Kingdom's electricity, currently employs 137 meter readers. (This implies approximately 760 meter readers across all electrical utilities.) Achieving and maintaining efficiency in meter reading is currently challenging in most places. Individual meter readers visit the same areas each day of each month and thereby become intimately familiar with their coverage areas, but it takes numerous months of trial and error to perfect their routes. Furthermore, numerous factors (e.g., new customer additions, staff absences, staff turnover) consistently complicate regular patterns and make it difficult to maintain the efficiencies they have created.

SNBN – along with the precise street addresses and detailed GIS maps it enables – creates the opportunity to optimize on an ongoing basis meter reading routes – saving meter readers an estimated average of 30 minutes each day.

**Service Call Facilitation** Electrical utilities frequently dispatch service teams to customer locations – either to establish new connections or to repair interrupted connections.

For example, EDCO established 7,978 new connections and responded to 32,883 service interruptions in 2019. On each of these occasions, customer call center operators, service team dispatchers, and service teams themselves work together to locate a customer – and face numerous challenges along the way. In most cases, multiple utility team members must interact with customers multiple times to determine their location through a combination of landmarks, geolocation markers – even standing outside to “flag down” the crew. In some cases, this process is complicated by the fact that customers and the technical teams serving them are living and working outside of Amman, but the customer service call center operators and service team dispatchers are living and working in Amman – and therefore personally unfamiliar with the local geography about which they are communicating with both customers and service teams.

The precise street addresses and detailed GIS maps enabled by SNBN make it possible for customer locations to be identified and reached independently and much more quickly – saving an estimated 10-15 minutes per service call.

**Distribution Loss Reduction** All electrical utilities lose a significant amount of the energy they distribute due to a combination of factors related mainly to transmission and distribution. Transmission losses occur when the amount of energy generated is more than the amount of energy that is ultimately distributed to customers – due to numerous factors such as matching electricity supply with customer demand that fluctuates significantly throughout each day as well as across

seasons. Distribution losses occur when the amount of energy distributed is more than the amount of energy that is paid by customers – again due to such factors as theft and meter errors.

For example, Jordan lost 13.30% of its electricity in 2018 – with 1.98% in transmission and 11.94% in distribution. While these performance levels are good relative to regional benchmarks<sup>14</sup>, combatting losses is always a priority for utilities. Jordan’s utilities are increasingly using “smart” meter technology, which is fully automated and centrally monitored, to control transmission losses. Managing distribution losses, however, remains labor intensive – with loss prevention experts scanning system consumption for deviations from expected patterns, then making site visits to examine the integrity of nearby meters and power lines. Currently, both identifying specific areas and pinpointing exact locations where distribution losses may be occurring requires significant time searching.

The combination of precise street addresses for customers and detailed GIS maps enabled by SNBN will accelerate the process – enabling teams to positively identify and stop errors or theft sooner, thereby saving an estimated 0.1-0.2% in losses overall.

**Vehicles** Faster, shorter trips for electricity and water meter reading and service visits will result in proportionally less mileage, fuel, and maintenance each year for utility vehicles.

### Analysis of Measurable *Electricity Utility* Benefits for CBA

The Assessment estimates that SNBN expansion will generate a total of \$0.7 M annually in measurable benefits in the domain of electric utility services. This is comprised of \$0.3 M in labor cost savings due to the reduction in response time for all service calls, including new service connection and existing service interruption, \$0.2 M in labor cost savings due to efficiency in daily meter reading and billing routes, and \$0.2 M in cost savings due to the reduction in distribution losses. (See Table 15 for more information about this estimate.)

**Table 15. Breakdown of Benefit Estimate: Utility Services – Electricity**

#### Reduction in Time for Service Calls

<b>Breakdown of Benefit Estimate: Utility Services – Electricity (1/4) Reduction in Time for Service Calls<sup>1</sup></b> First “Steady State” Year (First Month Annualized), Base Case, Key Factors		
<b>Factor</b>	<b>Value</b>	<b>Source</b>
(a) Number of service calls: EDCO (2019)	40,861	EDCO
x (b) Service call team cost per minute: EDCO	JD 0.13	EDCO
x (c) Estimated time saved due to SNBN per service call: EDCO	12.5 minutes	EDCO
/ (d) EDCO market share (2018)	19.9%	NEPCO
<b>= (1e) Subtotal Benefit ((a x b x c) / d)</b>	<b>JD 0.3 Million</b>	

#### Optimization of Meter Reading Routes

<b>Breakdown of Benefit Estimate: Utility Services – Electricity (2/4) Optimization of Meter Reader Routes</b> First “Steady State” Year (First Month Annualized), Base Case, Key Factors		
<b>Factor</b>	<b>Value</b>	<b>Source</b>
(a) Number of meter readers: EDCO	137	EDCO
x (b) Average meter reader cost per minute	JD 0.04	EDCO
x (c) Estimated time saved due to SNBN per day	30 minutes	EDCO
/ (d) EDCO market share (2018)	19.9%	NEPCO
<b>= (2e) Subtotal Benefit ((a x b x c) / d)</b>	<b>JD 0.2 Million</b>	

<sup>14</sup> USAID/Jordan. “Economic Growth Diagnostic,” p. 26

## Reduction in Distribution Losses

### Breakdown of Benefit Estimate: Utility Services – Electricity (3/4) Reduction in Distribution Losses Sample Year 2032 (First “Steady State” Year), Base Case, Key Factors

Factor	Value	Source
(a) Total purchased energy (2018)	18,906,000 MWh	NEPCO
(b) Total losses (2018)	13.3%	
(c) Average blended purchase price per KWh (2018, EDCO/JEPCO/IDECO)	0.07	
(d) Value of purchased energy (a x c)	JD 1,317 million	
(e) Value of losses (b x d)	JD 175.2 million	
(f) Potential savings in total losses from improvement due to SNBN in distribution losses	0.01%	EDCO
(g) Reduction in total losses from improvement due to SNBN in distribution losses (b x f)	0.013%	-
(h) <i>Pro forma</i> total losses (b – g)	13.28%	
(i) <i>Pro forma</i> value of losses (d x h)	JD 175 million	
<b>= (3j) Subtotal Benefit (e – i)</b>	<b>JD 0.2 Million</b>	


## Total


### Breakdown of Benefit Estimate: Utility Services – Electricity (4/4) Total Sample Year 2032 (First “Steady State” Year), Base Case, Key Factors

Factor	Value	Source
<b>(1e) Subtotal Benefit</b>	<b>JD 0.3 Million</b>	
<b>(2e) Subtotal Benefit</b>	<b>JD 0.2 Million</b>	
<b>(3j) Subtotal Benefit</b>	<b>JD 0.2 Million</b>	
x (a) Adjustment for SNBN expansion area (based on population)	43.2%	GoJ Dept. of Statistics
x (b) Projected annual population growth rate (2020-40)	1.1% <sup>an</sup>	GoJ Dept. of Statistics
x (c) Average annual inflation rate (2009-19)	2.5% <sup>an</sup>	Central Bank of Jordan
/ (d) JD:USD exchange rate	JD 0.71	US Department of the Treasury
<b>Total Benefit (((1e + 2e + 3j) x a x b x c) / d)</b>	<b>\$0.7 Million</b>	

## Analysis of Immeasurable Electricity Utility Benefits for MCA


As in the Water Utilities sector, the Assessment estimates moderate immeasurable benefits in the Electricity Utilities sector based primarily on strong civic impact as well as moderate governance and environmental impact from the more efficient response to service calls and general management of electricity infrastructure which nationwide SNBN makes possible. (In the case of the economic criterion, only vehicle and customer savings associated with faster response to calls are addressed since efficiencies in response to all kinds of service calls and daily meter reading have already been covered by the CBA.)


 **Economic** The Assessment team estimates that SNBN expansion will have modest economic impact in the Electricity Utilities sector due to vehicle and customer time savings associated with faster response to all kinds of service calls. As discussed in the Water Utilities section, while the volume of trips made in the Electricity Utilities sector is high – driven by more than 200,000 service calls of all kinds in 2019 and 760 daily meter readers in 2020 (as estimated by the Assessment team) – efforts to quantify this same opportunity (i.e., vehicle savings in the Emergency Services sector) yielded relatively modest (e.g., less than \$1.0 M) benefits. Also as discussed in the Water Utilities section, it is important to note that a hidden cost of service calls in areas without SNBN areas is the extensive time that is required of the customer to participate, but again the Assessment team roughly estimates based on simple assumptions that the incremental impact of this opportunity will likely not be sufficient for SNBN expansion to have more than modest economic impact in this sector.

 **Governance** (*Entry repeated from Water Utilities section*) The Assessment team estimates that nationwide SNBN would have moderate governance impact through Utility Services. Both Water and Electricity distributors will be better able to provide services to citizens – including both new and existing customers – and help satisfy their basic needs. In addition, Water and Electricity



distributors will be able to manage more efficiently and effectively critical infrastructure and vital natural resources.

 **Civic** *(Entry repeated from Water Utilities section)* The Assessment estimates that SNBN expansion would have great civic impact through Utility Services. The improved ability of Water and Electricity distributors to provide the vital services on which Jordanians rely every day would build their confidence, trust, and pride in their government and society.

 **Environment** The Assessment estimates that SNBN expansion would have moderate impact on the environment through Electricity Utility Services based on the combination of the relatively high volume of field visits by Electricity distributors and the significant degree to which their travel time to customer locations is reduced through more accurate location information as well as the way in which these distributors more efficiently and effectively manage Jordan's energy resources.

## FINANCIAL SERVICES

The assessment finds that nationwide SNBN will enable banks to strengthen their compliance with anti-money laundering and other security-related requirements – adding strategic value for Jordan. The CBJ “Anti-Money Laundering and Terrorism Financing” Instruction Number 14/2018 requires banks to obtain the exact street address of individual and commercial applicants for most bank account and credit products. The CBJ “Basic Bank Account” Instruction Number 1/2019 does allow banks to offer accounts with lower due diligence requirements – including a traditional, landmark-based geographic location instead of the exact street address – but this only applies to “basic” bank accounts. “Basic” bank accounts, which are available to Jordanians residing in Jordan who do not hold a bank account at any other bank in the Kingdom, are for Jordanian Dinars only and have no minimum account balance, but a maximum limit of JD700. Basic banks accounts offer access to some services (i.e., cash withdrawal and deposit, outbound and inbound transfers, debit card e-banking), but not others (i.e., check books, credit facilities, credit cards, interest or prizes). They were designed to ensure that no Jordanians are excluded from the formal financial system and used primarily as a channel for public assistance (e.g., National Aid Fund cash transfers). Basic banks accounts pose little risk in terms of money laundering or illegal financing activity given their limitations.


In GAM, which has comprehensive SNBN, banks stringently enforce anti-money laundering requirements. For example, Bank al Etihad will only accept and process credit applications in Amman if customers provide proof of address at the time the application is submitted. It will sometimes be more flexible with banking products, such as savings accounts, by allowing customers to open accounts without proof of address but will follow-up regularly and not allow the account to remain active if this requirement remains unsatisfied beyond a grace period.


By contrast, in areas without consistent SNBN, banks uniformly accept “next best” alternatives (e.g., electrical utility bill, residential lease). Such “workarounds” have the benefit of approximate compliance while still meeting the needs of a large customer segment. However, they expose both banks and Jordan to security risk since alternative documents offer location information which is less precise than an exact street address. In limited cases they also create barriers to financial services for customers who either do not have or cannot furnish easily alternative documents. For example, tenants of apartments which have been developed without permits to avoid new Property Tax assessments often have informal, undocumented lease agreements with their landlords. SNBN would overcome these challenges by allowing all customers and banks to comply with the law fully and efficiently.


### Analysis of Immeasurable Financial Services Benefits for MCA

The Assessment team estimates least immeasurable benefits in the Financial Services sector based on relatively low, but consistent impact across economic, governance, and civic criteria due to the

way SNBN expansion directly supports government efforts to prevent illegal financial activity and indirectly supports financial inclusion.

 **Economic** The Assessment estimates that SNBN expansion would have modest economic impact in the Financial Services sector. As explained earlier, nationwide SNBN will make it easier for banks to comply fully with CBJ requirements targeting illegal financial activity. It is too early to determine whether such incremental compliance will be effective, let alone the magnitude of any effect. (The GoJ Instruction in question is approximately two years old and publicly available reports about illegal financial activity during this period are not yet available. For example, the Middle East & North Africa Financial Action Task Force published its last “Mutual Evaluation Report” with Jordan of “Anti-money laundering and counter-terrorist financing measures” in November 2019 covering performance through July 2018.) However, the Assessment team assumes that it may have some positive effect on illegal financial activity, which in turn may have a positive effect on the economy. Also as explained earlier, nationwide SNBN will make it easier for some customers – particularly those living and working in the informal sector – to comply with bank requirements and ensure they have easier access to the full range of financial products and services that are available, which in turn may have a positive impact on economic activity.

 **Governance** The Assessment estimates that SNBN expansion would have modest governance impact in the Financial Services sector based on the likelihood that rules put in place to protect national interests will be followed more closely.

 **Civic** The Assessment estimates that SNBN expansion would have modest civic impact in the Financial Services sector based on the incremental reassurance that citizens feel by knowing that rules put in place by their government to protect them will be followed more closely. It may also reduce the negative perception by citizens living outside the capital and/or working in the informal sector that people in more affluent districts have easier access to better services.

## COMMERCIAL SERVICES: DELIVERY

Jordan’s leading delivery services – ranging from the larger, more established, international logistics, package delivery, and courier companies (Aramex, DHL) as well as the smaller, local delivery start-ups (DeliveryOne, Talabat) – agree that nationwide SNBN would stimulate both supply of and demand for their services. All currently struggle in areas without SNBN with the “last mile” of delivery due to the lack of precise addresses– leading to higher labor, fuel, and vehicle costs; lower levels of customer satisfaction; and limited feasibility for serving all markets. SNBN expansion would address these constraints, enable the expansion of their services, and thereby support the growth of e-commerce – with Jordanians better able to buy and sell online because of the greater ease and affordability of pickup and delivery.

**Faster, Easier Delivery** International companies deliver more than 2,000 packages each day in Jordan. A distribution team sorts them by area in a processing center and assigns them to drivers who deliver them to homes and workplaces. The market leader, Aramex, reports that 9% of these packages on average do not have a complete street address (despite strong efforts to obtain them from senders when they first receive the packages) – typically because they are being sent to a location which does not yet have SNBN. In these cases, the distribution team must take the extra steps of contacting the recipient and trying to specify more clearly where packages should be delivered before assigning them to drivers – increasing average processing time fourfold. These extra steps are typically successful in specifying the delivery address only 25% of the time – meaning that approximately 7% of the packages delivered every day do not have precise delivery addresses. For these packages, the drivers must also take the extra steps of contacting the recipients and trying to locate them through the usual combination of neighborhood landmarks, geolocation markers, and inquiries on the street – adding approximately 25 minutes to each of these deliveries. Despite this extra effort, drivers are unable to deliver each day approximately 5% of these packages, which

must then return to the distribution center for another round of special processing the next day. If subsequent attempts are also unsuccessful, then companies may transfer these “dead cases” to a special warehouse until the recipient can be located or the package can be returned to the sender.

SNBN expansion would enable international companies to avoid these time-consuming workarounds and deliver all packages with the impressive efficiency they have achieved through heavy investment in sophisticated automation and systems. This would save labor cost due to less time spent during distribution and delivery, vehicle cost (i.e., fuel and maintenance) due to lower mileage and less time on the road during delivery, and perhaps even overhead cost due to the elimination of special warehousing for undeliverable packages. (Such cost savings would extend benefits which these companies have already captured over the past 10-15 years in GAM thanks to the development of its SNBN. For example, DHL reports that it has been able to reduce both average delivery times and overall delivery costs – including labor, fuel, and storage – by approximately 50% in GAM thanks to increasingly precise street addresses.) This would also likely increase customer satisfaction since deliveries could be made more quickly, more easily (i.e., without time-consuming participation from the recipient), and for a lower price.

Local start-ups also make thousands of deliveries each day. Fully automated, GPS-enabled platforms guide drivers where to pick-up a package (typically a meal from a local restaurant) and where to deliver that package (typically a home or workplace) – to minimize partner (e.g., restaurant) and customer waiting times as well as to maximize customer satisfaction and driver utilization. In cases where precise street addresses are unavailable, however, these sophisticated, innovative systems break down and drivers revert to the traditional combination of phone calls, text messages, geolocation markers, and inquiries on the street for both pick-up and delivery – which compounds the delays. DeliveryOne reports that its drivers spend an additional 3-5 minutes per delivery when such workarounds are required, and Talabat reports that its employed (i.e., salaried) drivers currently spend approximately 800 hours each week searching for pick-up and delivery points. Such delays also increase fuel costs, which represent a significant share of overall trip costs (estimated by DeliveryOne at almost 30%), since delivery vehicles spend that much more time on the road. SNBN expansion would enable these growing local companies to avoid these time-consuming workarounds, take full advantage of their sophisticated systems, and save significant labor and vehicle costs – while also boosting the satisfaction of their partners (e.g., restaurants), employees or affiliates (i.e., drivers), and end users.

**Service Expansion and Revenue Growth** The combination of relatively high cost, frequent delays, and inconvenience constrains the degree to which companies supply and customers demand delivery services in areas without SNBN. International companies offer delivery to most parts of the Kingdom, but lower service levels (e.g., delivery time) and higher costs/rates limits the appeal of their offerings to customers. As a result, their coverage tends to cluster in Amman and Zarqa (Aramex and DHL) plus – to a lesser extent – Irbid, Karak, and Aqaba (Aramex only). Even more starkly, local delivery start-ups only operate in particular geographic areas based primarily on the feasibility of serving them profitably. For example, DeliveryOne operates almost entirely in Amman. The category leader, Talabat, also started in Amman and entered Aqaba as its second market. Even though it is much further away and much smaller than other cities, such as Zarqa and Irbid, Talabat selected Aqaba because lower operating costs due to SNBN there made it the next most feasible market to serve profitably. International companies agree that nationwide SNBN will likely enable them to offer better service (e.g., faster delivery at lower cost/rates) in parts of the Kingdom which are currently underserved. Similarly, local delivery start-ups agree that nationwide SNBN will likely enable them to expand their services to new cities. (It might also catalyze even further growth in this already fast-growing, competitive sector. For example, local delivery grew at a compound annual growth rate (CAGR) of 24% between 2012-16 from 31 to 73 operators – while international delivery grew at only 7% CAGR over the same period from 6 to 8 operators.) Access to better and new delivery services will also likely stimulate growth in customer demand and revenue. In this way,

SNBN expansion will likely create a “win-win” scenario for delivery companies, their customers – and the economy overall.

### Analysis of Measurable *Delivery Services* Benefits for CBA


The Assessment team estimates that nationwide SNBN will generate a total of \$2.4 M annually in measurable benefits in the domain of commercial delivery services. This is based on the lower labor cost that international companies could achieve by applying all of their package deliveries the same efficiencies for sorting, transportation, and delivery which they currently enjoy in areas with SNBN. (See Table 16 for more information about this estimate.)

**Table 16. Breakdown of Benefit Estimate: Commercial Services – Delivery**

Factor	Value	Source
(a) Number of packages delivered without complete address (2019)	75,000	Confidential corporate source(s)
(b) Average sorting time saved due to SNBN per package without complete address	0.1 hours	
(c) Average share of packages still without complete address after sorting	75%	
(d) Average delivery time saved due to SNBN for package still without complete address after sorting	0.4 hours	
(e) Average share of packages returned for re-processing after first delivery attempt	5%	
(f) Blended cost of processing packages per hour	JD 40	US Department of the Treasury
(g) JD:USD exchange rate	JD 0.71	
<b>= Total Benefit</b> $((((a \times b) + (a \times c \times d) + (a \times c \times e \times d)) \times f) / g)$	<b>\$2.4 Million</b>	

### Analysis of Immeasurable *Delivery Services* Benefits for MCA


The Assessment team estimates moderate immeasurable benefits in the Commercial Delivery Services sector based on moderate, consistent impact across economic, civic, and environmental criteria due to faster, easier delivery and service expansion. (In the case of the economic criterion, labor cost savings from more efficient pick-up and delivery among international delivery companies is excluded because the CBA already addresses them.)


 **Economic** The Assessment estimates that SNBN expansion would have a moderate economic impact in the Commercial Delivery Services sector due to four major factors, namely labor cost savings from more efficient pick-up and delivery among local delivery companies, vehicle savings from more efficient transport for both international and local delivery companies, customer time savings from more efficient pick-up and/or delivery for both international and local delivery companies, and service expansion for both international and local delivery companies, labor cost savings from more efficient pick-up and delivery among local delivery companies.

In terms of more efficient pick-up and delivery among local delivery companies, the Assessment team estimates modest but material savings (e.g., under \$1 M) based on data shared informally by market leader Talabat that it currently loses 800 hours of employed driver time per week at minimum wage rates to unnecessary searching for pick-up and delivery locations in areas without SNBN.

In terms of customer time savings from more efficient pick-up and/or delivery for both international and local delivery companies, the Assessment team again estimates modest but material savings (e.g., \$1-2 M). On the one hand, the volume of activity is relatively high with international companies delivering over 800,000 packages per year (based on data provided by a market leader) and local companies transacting hundreds of thousands – or even millions – of times each year (based on 800 deliveries per day reported by market leader Direct One, plus the fact that local deliveries have both a pick-up and drop-off component). On the other hand, most of these transactions require little customer contact because they take place within GAM (for both international and local companies) and are robustly supported by geolocation apps (especially for local companies). Plus, the transactions which do require customer contact are likely briefer than transactions in the Water Utility, Electricity Utility, or Internet sectors.

In terms of service expansion for both international and local delivery companies, the Assessment team estimates moderate impact. Although most international companies deliver nationwide, coverage tends to cluster in Amman and Zarqa (Aramex and DHL) – and to a lesser extent, Irbid, Karak, and Aqaba (Aramex only) – due to higher costs and lower service levels. Local delivery companies are even more restricted to serving only markets with SNBN or – more recently – those with populations which are so dense that they compensate with higher delivery volume for the relative inefficiency of serving them. The assignment of a precise street address to all Jordanians through SNBN expansion would naturally encourage delivery companies to serve a much larger group of customers and a much larger group of customers to purchase services from delivery companies due to lower costs, higher service levels, and greater ease. This opportunity could be limited, however, by certain characteristics of customers in SNBN expansion areas, such as the pace of changing behavior or spending power.

 **Civic** The Assessment team estimates that nationwide SNBN would have moderate civic impact in relation to Commercial Services based on the confidence and pride that citizens will feel about their country because of the vital services it provides as well as the way those services connect them to modern, convenient resources – such as e-commerce for both Delivery and Internet Services as well as e-government and e-learning for Internet Services. It may also reduce the negative perception by citizens living outside the capital and/or working in the informal sector that people in more affluent districts have easier access to better services.

 **Environment** The Assessment estimates that SNBN expansion would have moderate impact on the environment through Commercial Delivery Services based on the combination of the relatively high volume of deliveries made by local and international deliverable companies with the significant degree to which their travel time to customer pick-up and delivery locations is reduced through more accurate location information.

## COMMERCIAL SERVICES: INTERNET

Jordan's leading internet service providers (Orange, VTEL) believe nationwide SNBN could enable significant cost reduction and 5-10% additional subscriber growth, plus facilitate service expansion – thereby increasing access to e-commerce, e-government, and e-education services. Site visits to connect new customers or service existing ones are very time consuming and difficult outside Amman due to the lack of street addresses – increasing costs for customers and inhibiting their acquisition and retention by internet service providers. Maximizing access to existing infrastructure as well as planning investment in new infrastructure is challenging without detailed population maps based on residence and business addresses.

Expanding SNBN would alleviate all these challenges, creating significant value for both internet users and service providers –to the point that Orange, Jordan's internet market share leader, signaled willingness to share the annual cost of maintaining the comprehensive address database that nationwide SNBN will enable.

**Service Call Facilitation** Fixed line (e.g., ADSL, fiber) internet service providers frequently dispatch service teams to customer locations – either to establish new internet connections or to troubleshoot problems with existing connections. On each of these occasions, sales or customer service representatives, technical team dispatchers, and technical teams themselves work together to locate a customer – and face numerous challenges along the way in areas that do not yet have SNBN.

In cases of establishing service for new customers without a street address, the sales team must first determine whether customers live or work in buildings which are connected to the company's existing fixed line network. This involves up to 90 minutes of geolocation work between customers, who typically “drop a pin” on their mobile phones using apps like Google Maps or WhatsApp, and the sales department, which then uses as many as four applications (e.g., ERI Maps, Open Street Maps, Google Maps, and Wiki Maps) to triangulate the customer's location with the company's



network maps. Once the sales department confirms customers can be connected, cases are transferred to the technical team which interacts with customers multiple times through telephone calls and/or text messages to determine their location through a combination of additional geolocation markers, landmarks, and personal inquiries on the street – which can require up to 60 additional minutes.

In cases of fixing problems for existing customers without a street address, the process is easier for two reasons. First, many issues can be resolved directly by customer service representatives using remote access tools. Second, even if remote fixes are unsuccessful and a technical team must be dispatched to fix the problem on site, there is no need to determine first whether the customers' buildings are already connected to the network. Nevertheless, technical teams serving existing customers follow the same process, face the same challenges, and experience the same delays locating the home or business as teams connecting new customers.

The precise street addresses and detailed GIS maps enabled by SNBN make it possible for customer locations to be validated against the network map by the sales team and reached by technical teams independently and much more quickly – saving up to 60-90 minutes per call compared with areas without SNBN. Orange already experiences these efficiencies within Amman, looks forward to their expansion outside Amman, and estimates that up to 5% could be saved in annual network maintenance costs as a result.

**Subscriber Growth** Once internet service providers connect a building to their fixed line network, it is in their best interest to acquire as many people living and/or working in that building as customers as possible – to maximize their return on investment and assets. They typically use in-building promotions (e.g., leaving fliers) or door-to-door sales to pursue this objective. In areas where buildings are numbered and existing customers have precise street addresses, service providers can identify before launching sales campaigns both their highest potential buildings (based on current penetration) and their specific targets within those buildings – making those campaigns especially efficient and effective. In areas without SNBN, by contrast, sales campaigns are undirected by such market intelligence and consequently less efficient and effective.


Orange estimates that it could add 5-10% more subscribers overall by applying to all its sales campaigns the comprehensive, detailed customer information that nationwide SNBN will offer – representing significant growth in user access and subscription revenue than would otherwise be possible.

**Service Expansion** The extension of fixed line internet infrastructure to new municipalities, neighborhoods, and buildings is very costly and must therefore be justified by the reliable expectation of a certain number of new subscriptions. It is relatively quick and easy in areas with SNBN to make such a justification – thanks to the detailed population density maps which can be created based on precise addresses. By contrast, it is very challenging to do so in areas without SNBN – meaning that such investment decisions are either slow to be made or not made at all.

Nationwide SNBN expansion would enable the creation of detailed population density maps throughout the Kingdom and thereby facilitate and accelerate investment in broadband extensions – potentially making the internet accessible more rapidly to certain Jordanian communities than would otherwise be possible.

### **Analysis of Immeasurable Internet Services Benefits for MCA**

The Assessment estimates moderate immeasurable benefits in the Commercial Internet Services sector based primarily on very strong economic impact and moderate civic impact from more efficient customer service as well as more rapid expansion of service and growth in subscribers.


 **Economic** The Assessment team estimates that SNBN expansion would have very great economic impact in the Internet Services sector due to both cost and revenue factors. Labor




savings from faster response to calls for new service connections and existing service interruptions as well as vehicle and customer time savings associated with faster response to all service calls would all contribute to reduced costs. Incremental service expansions, enabled by geographically-tailored marketing efforts and the resulting infrastructure investment and subscriber growth, would all contribute to increased revenues. While it is more difficult in the highly competitive Internet and Telecommunications sector to obtain data directly from stakeholders, the Assessment team has used publicly available data about the size of the Jordanian internet market, experiences in regional countries, and analysis done here for comparable sectors to make directional, “outside-in” estimates of the potential economic impact enabled by nationwide SNBN.

In terms of cost savings, comparisons with the Water and Electricity Utility Services suggests a similarly modest but significant (e.g., \$1-3 M) savings from lower labor cost, lower vehicle cost, and less customer time through the faster location of customers for service calls. On the one hand, Jordan’s internet market with 6.78 million users currently is smaller than the ubiquitous basic utility markets, and a larger share of internet service operations are managed remotely – obviating the need for customer site visits. On the other hand, both labor costs and customer opportunity costs are likely to be higher in this more educated and affluent segment of the Jordanian market. So, it is likely that these factors balance one another to yield a similar (and perhaps slightly higher) economic impact due to cost savings as the utility services.

In terms of revenue growth, a combination of publicly available indicators points directionally toward moderate to great economic impact. The head of Sales at Jordanian internet market leader Orange asserted that nationwide SNBN could drive an incremental 5-10% growth in subscribers due to the enhanced market intelligence, marketing, and sales that highly detailed customer maps could enable. Given Jordan’s current 6.78 million subscribers, this suggests an additional 340,000-680,000 subscribers above and beyond current growth. The fact that Jordan currently has internet penetration of 67% while regional peers Lebanon and Dubai are at 78% and 95%, respectively, suggests that such a leap in subscribers is feasible. Orange’s most popular internet offering is currently priced at JD18 (Governorates) – JD20 (East Amman) per month. Capturing these incremental subscribers at these rates implies revenue growth of approximately JD77-155 M for the sector.

 **Civic** *(Entry repeated from Commercial Delivery Services section)* The Assessment team estimates that nationwide SNBN would have moderate civic impact in relation to Commercial Services based on the confidence and pride that citizens will feel about their country because of the vital services it provides as well as the way those services connect them to modern, convenient resources – such as e-commerce for both Delivery and Internet Services as well as e-government and e-learning for Internet Services. It may also reduce the negative perception by citizens living outside the capital and/or working in the informal sector that people in more affluent districts have easier access to better services.

 **Environment** The Assessment estimates that SNBN expansion would have modest impact on the environment through Commercial Internet Services based on the combination of the volume of service calls with the degree to which their travel time to customer locations is reduced through more accurate location information.


## COMMERCIAL SERVICES – TAXI/RIDE HAILING


Taxis and car service companies will benefit from nationwide SNBN. There are approximately 16,000 registered taxis (as of 2016), 13,000 “ride hailing” application (e.g., Careem, Uber) vehicles (as of 2019), and another 20,000 unlicensed drivers which constitute the taxi and car service industry. However, despite the large fleet size and the fact that taxis and ride hailing vehicles are constantly on the street driving passengers between locations, SNBN would not have a significant impact on either. The car service sector has successfully circumvented the lack of systematic SNBN, with the

utilization of geo-location applications such as Google Maps. Passengers use the ‘pin-drop’ feature in the application to indicate their pickup as well as drop off locations. Of course, the ‘pin drop’ feature is not always 100% accurate, which may lead to relatively insignificant delays in picking up the passenger; however, once in the taxi or ride hailing vehicle, the passenger is able to ‘work’ with the driver to determine the exact drop off location. The taxi and ride hailing services represent a unique sector as it would not significantly benefit from nationwide SNBN.

### **Analysis of Immeasurable Taxi/Ride Hailing Benefits for MCA**

The Assessment estimates that SNBN expansion would have a negligible impact within Taxi & Ride Hailing Commercial Services based on modest economic and environmental impact due to marginally shorter average ride times.

 **Economic** The Assessment team estimates that SNBN expansion would have modest economic impact in the taxi and ride hailing services sector. The Assessment team’s KII with a prominent ride hailing service (Jeeny) reveals that players in the sector have invested in maximizing the functionality (e.g., more advanced “geo-fencing”) of existing geo-location services, such as Google Maps, to determine customer pick-up and drop-off locations with increasingly high accuracy. The combination of these technical advances with the fact that customer and service provider naturally work well together efficiently (e.g., with the benefit of two guides, at no opportunity cost to customers given that they are occupied with their rides in any case) means that these services already operate quite efficiently and effectively – and that neither their cost structure, nor their revenue growth depends on SNBN expansion. This is exemplified by the fact that numerous ride hailing companies already operate widely throughout the Kingdom – by contrast with other sectors (e.g., local delivery) which require SNBN to operate sustainably. While market players acknowledge that entering precise addresses can facilitate finding both pick-up locations and drop-off locations – particularly when neither the driver, nor the passenger is familiar with it, they emphasize that this would only likely make a marginal improvement in ride times.


 **Environment** The Assessment estimates that nationwide SNBN would have modest impact on the environment through taxi and ride hailing services based on the combination of the ride volume with the relatively marginal degree to which trip times are reduced through more accurate pick-up and/or drop-off location information.

## **TOURISM**


The key informant interviews, including with the Ministry of Tourism and Antiquities (MoTA) suggest that SNBN will further enrich Jordan’s tourism industry. SNBN will help MoTA link tourist programs and create tourist routes, particularly during the Christian pilgrimage period. Key informant interviews also assert that it will facilitate the promotion of cultural attractions as well as lesser-known locations. Moreover, tourists, many of whom do not speak or read Arabic, will be better equipped with more detailed physical maps or Google Maps, in their language. They will be able to travel more quickly and easily, with a lower likelihood of getting lost, especially in cities that they may be visiting for the first time. In addition, MoTA affirms that SNBN has the potential to further promote local development in municipalities. As was mentioned in the previous section, Google Maps allows locals and tourists alike to find public service locations (e.g., banks, restaurants), that they might not have known about otherwise, had it not been for SNBN-enabled GPS services.

### **Analysis of Immeasurable Tourism Benefits for MCA**

The Assessment estimates that SNBN expansion would have a negligible impact within Tourism sector based on modest economic and civic impact due to the facilitation of local touristic activity.

 **Economic** The Assessment team estimates that nationwide SNBN would have modest economic impact on tourism as further improvements to industry (e.g., more detailed maps and guidebooks) and wayfinding (e.g., ability of tourists to enter into a GPS the exact street address

of an unknown location) are expected to drive more direct economic activity by Jordan's approximately 3.0 M (2019) annual tourists. MoTA suggests that more detailed maps and guides as well as greater ability to leverage services such as Google Maps would enable tourists to find attractions and services more easily and independently – leading to more touristic activity, greater satisfaction with their visits, and perhaps over time an uptick in tourism as a result. Moreover, MoTA suggests that nationwide SNBN would help it to support economic growth by creating more extensive tourist routes.

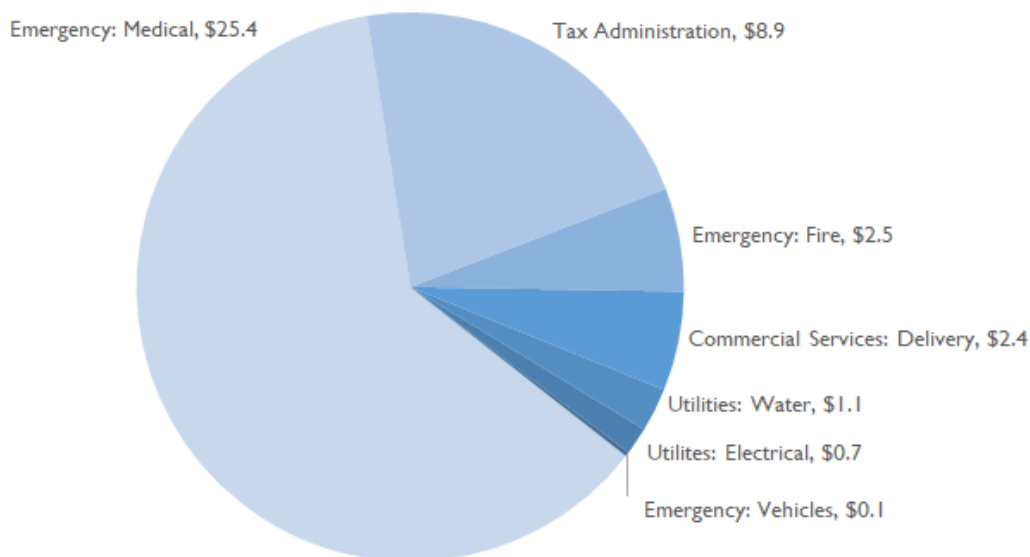
 **Civic** The Assessment estimates that SNBN expansion would have modest impact on the civic spirit through tourism based on the increased pride and confidence which citizens feel about their country and culture upon seeing foreign tourists admiring local sites and patronizing local businesses more actively.

## 4.6 BENEFITS – SYNTHESIS

### SYNTHESIS OF MEASURABLE BENEFITS FOR CBA

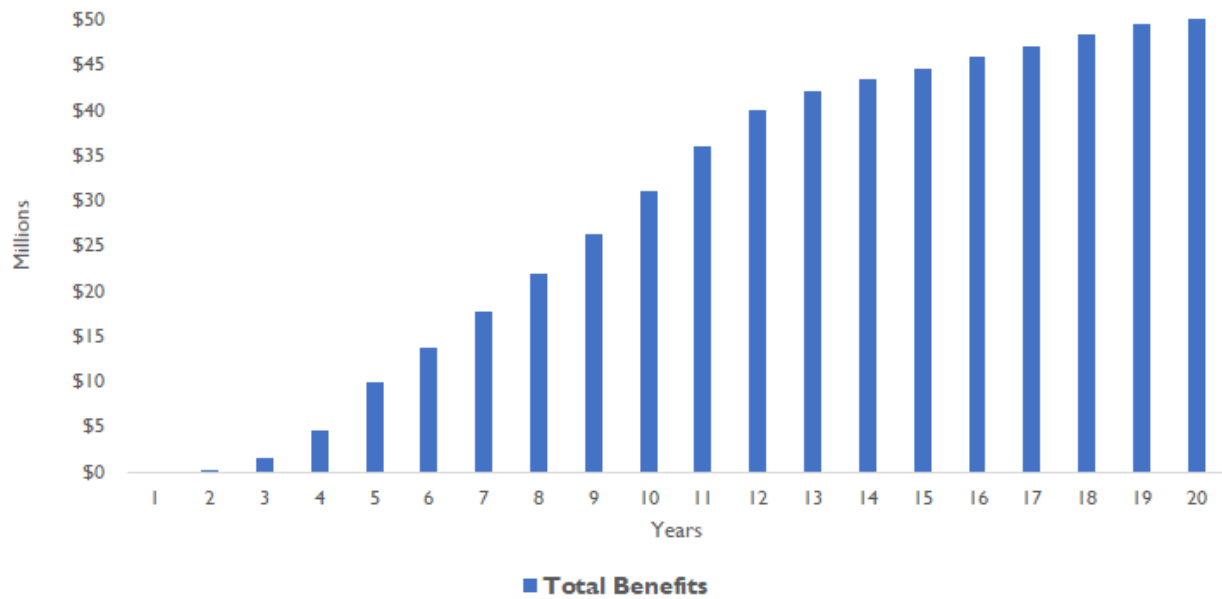
The benefits from SNBN expansion which were measurable by the Assessment team total \$40.9 M. Emergency Services: Medical contributes significantly more than any other category with 62% (\$25.4 M) of the total. When these Emergency Medical benefits are taken together with those of Emergency Fire and Vehicles, the contribution of Emergency Services reaches 68.2% (\$27.9 M). Tax Administration is the second largest category, contributing 22% (\$8.9M) of the total. Commercial Services: Delivery and Utility Services are smaller but still significant at 6% (\$2.4 M) and approximately 2% (~\$1.0 M) each for Water and Electric Utilities.

**Figure 2. Breakdown of Measurable Benefits**  
(First “Steady State” Month Annualized, Base Case, \$ Millions)



These benefits increase gradually over a period of 11 years while the expanded SNBN system is being installed (i.e., based on operational completeness over the proposed implementation period of five years) and while both organizations and individuals change their systems, processes, and behavior in response to SNBN (i.e., based on an assumed 11-year adoption period) to reach the “steady state” described here by the first month of Year 12. After this point, these benefits continue to grow for the balance of the 20-year cost-benefit analysis projection period based only on assumed rates of population and inflation growth.

**Figure 3. Total Benefits by Year** (20 Year Projection Period, Base Case)



## SYNTHESIS OF IMMEASURABLE BENEFITS FOR MCA

The Assessment team synthesized the immeasurable benefits which were individually discussed and analyzed in the previous section into a single matrix which combines all of the benefits, organizes them by the four evaluation criteria (i.e., Economic, Governance, Civic, Environment), and reflects the rankings that were assigned above.

**Figure 4. Synthesis of Immeasurable Benefits**

Benefit		Impact by Criterion				Overall Impact by Benefit
		Economic	Governance	Civic	Environment	
Government Services	Tax Administration					
	Crisis Response					
	Emergency					
	Public Safety					
	Land & Survey					
Utility Services	Water					
	Electricity					
Commercial Services	Delivery					
	Internet					
	Taxi/Ride Hailing					
Financial Services						
Tourism						

As can be seen, Crisis Response and Emergency Services emerge as the domains in which SNBN expansion promises the greatest overall impact due to very strong performance in three of the four criteria – economic, governance, and civic spirit. Public Safety follows closely with great overall impact due to very strong governance and civic impact, but slightly weaker economic impact. A cluster of five domains with moderate overall impact follows, including Tax Administration, Water Utilities, Electricity Utilities, Delivery Services, and Internet Services. While these domains have the same rank, the composition of their scores against the four evaluation criteria varies significantly – as they each have a unique profile (except for the two utilities). Finally, a cluster of four domains with negligible to no impact follows, including Land & Survey, Taxi/Ride Hailing, and Financial Services as well as Tourism.

### ASSESSMENT QUESTION #3

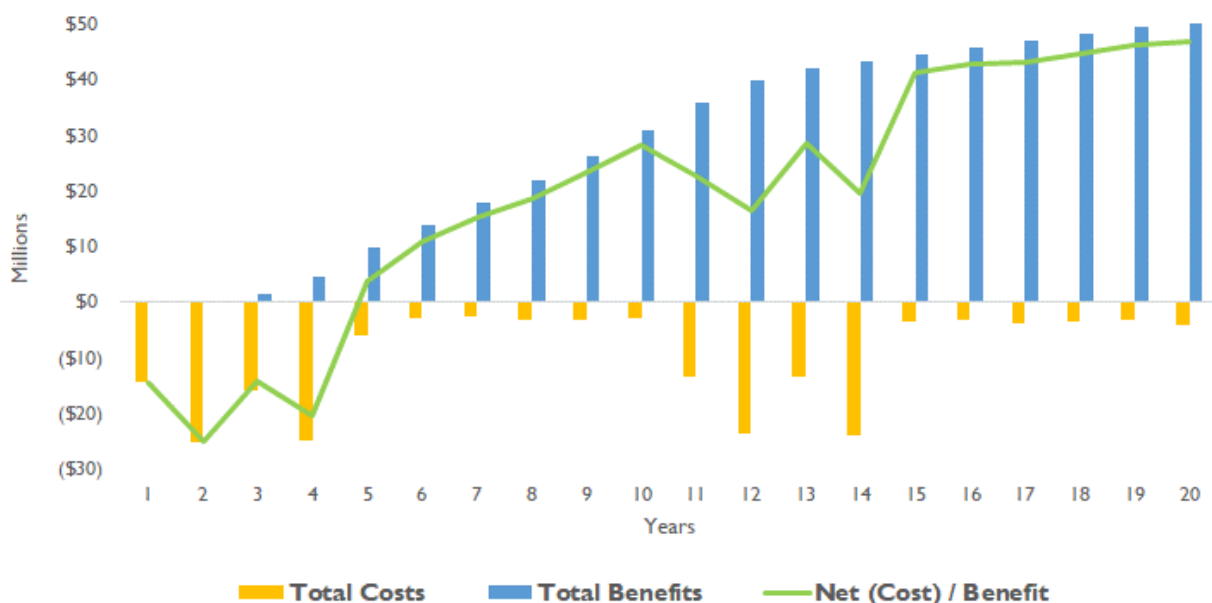
*Compare the benefits and costs, and produce the Economic Internal Rate of Return (EIRR) and Economic Net Present Value (ENPV) calculations associated with the scaling up of SNBN nationwide, based on the initial estimates prepared by USAID, including maintenance and repair costs and for any additional obligations of property owners*

#### 4.7 NET IMPACT OF MEASURABLE COSTS AND BENEFITS (CBA)

The Assessment measured the overall value of SNBN expansion by comparing estimates of its benefits with estimates of its initial installation, ongoing management and maintenance, and periodic replacement costs. The Assessment utilizes both data and assumptions from KIs and literature reviews to quantify the potential impact of the opportunities described above over a 20-year projection period. The CITIES Project provided initial investment estimates based on the actual costs of its current pilot project installing SNBN in nine municipalities, and the Assessment team estimated ongoing management and maintenance costs based on GAM's current expenditure plus periodic replacement costs based on the initial installation cost adjusted for inflation. The CBA combines these benefit estimates (i.e., blue bars on Figure 5) and cost estimates (i.e., orange bars on Figure 5) to determine for each year the net impact of SNBN expansion as economic cash flow (i.e., green line on Figure 5).

As we see, economic cash flow is negative during the five-year project implementation period but becomes positive during the first year of full SNBN implementation. This grows steadily between Years 5-10 due primarily to the increasing adoption of the SNBN system. This economic cash flow dips significantly in Years 11-14 based on the conservative assumption that MOLA will replace all of the signage 10 years after it was originally installed due to obsolescence. Once replacement is complete by Year 15, cash flow jumps back to its previous level and resumes a growth trajectory – albeit a shallower one which is driven at this point only by assumed annual rates of population and inflation growth. The “steady state” for the economic cash flow is reached in the first month of Year 12 – meaning the model assumes the SNBN system is fully operational and adopted by then.

**Figure 5. Net Impact by Year (20 Year Projection Period, Base Case)**



The CBA then applies to this cash flow both EIRR and EPNV analysis. EIRR estimates the profitability of the potential investment in SNBN expansion by determining the discount rate that makes the net

present value (NPV) of its cash flows equal to zero in a discounted cash flow analysis. In other words, any alternative investment would have to return more than the EIRR to be more attractive than SNBN expansion. ENPV also estimates the profitability of a potential investment in SNBN expansion by taking the difference between the present value of cash inflows and the present value of cash outflows over a period of time. This being the case, an investment with a positive ENPV will be profitable, and an investment with a negative ENPV will result in a net loss. In each case, the CBA produces an EIRR above donor industry standard minimums of 10-12% and a positive ENPV which creates economic value for Jordan.

**Table 17. CBA Impact Metrics (\$ Millions)**

Case	Description	EIRR	ENPV
<b>Base</b>	<ul style="list-style-type: none"> <li>▪ Most likely</li> <li>▪ Practical assumptions</li> </ul>	18.8%	\$64.7
<b>Downside</b>	<ul style="list-style-type: none"> <li>▪ Less likely, but possible</li> <li>▪ Pessimistic assumptions</li> </ul>	13.7%	\$24.6
<b>Upside</b>	<ul style="list-style-type: none"> <li>▪ Less likely, but possible</li> <li>▪ Optimistic assumptions</li> </ul>	24.7%	\$110.4

As we see in Table 17, the CBA model estimates EIRR of 18.8% and ENPV of \$64.7 M in the Base Case which indicates very strong potential for the proposed project. In the Upside Case, the CBA model estimates EIRR of 24.7% and ENPV of \$110.4 M which suggests significant room for additional value creation if things proceed more favorably than expected (but still within reason). In the Downside Case, the CBA model estimates EIRR of 13.7% and ENPV of \$24.6 M which assures us that even if things proceed less favorably than expected (but again still within reason) the proposed project will still satisfy donor minimum rates of return and create positive value for Jordan.

## 4.8 COMPLEMENTARY IMPACT OF IMMEASURABLE BENEFITS (MCA)

Figure 6 below illustrates the overall estimated impact of immeasurable benefits, which have been synthesized from the “Impact by Criterion” on the matrix shown in Figure 4. Again, the impact of each benefit was determined as a result of Jordan-specific data and international evidence collected and analyzed during the Assessment. As we see, three of the criteria – economic, governance, and civic spirit – offer similar, moderate levels of impact while environmental impact is more modest. The economic ranking indicates considerable upside for an already strong economic case.





The governance ranking also indicates considerable opportunity to deliver government services more efficiently, effectively, and equitably to citizens.

Finally, the civic ranking indicates ample and varied opportunities to strengthen the trust, boost the pride, and build the confidence of Jordanian citizens in their society, government, and country.

The environmental ranking reflects not only more limited opportunities for impact due to the nature of SNBN, but also – as mentioned in the Methods section – the fact that the Assessment found greatest relevance and therefore focused its consideration primarily on only one segment (i.e., transportation) of only one environmental challenge (i.e., greenhouse gas emissions). It is important to note that despite the limitations, the environmental impact is expected to make a material impact across Jordanian society.

**Figure 6. MCA Impact Estimates**



Criterion	Overall Estimated Impact
Economic	
Governance	
Civic	
Environmental	

## 5.0 CONCLUSIONS

The assessment concludes from these findings that nationwide SNBN will result in significant, positive economic and governance impacts for Jordan. SNBN supports many development goals prioritized by USAID/Jordan's CDCS 2020-25, such as inclusive private sector led growth (especially increasing economic participation and strengthening private sector competitiveness) and strengthened ability to improve water security (especially reducing water loss and improving sector ability to operate). In terms of economic impacts, SNBN expansion will facilitate the physical and digital connections to commercial markets on which modern economies depend – increasing access to services for customers while growing business for service providers; it will also facilitate compliance with anti-money laundering banking regulations. In terms of governance impact, SNBN expansion will strengthen municipal finances through better tax administration and enable more efficient, effective emergency services and public utility management. Taken together, the expansion of SNBN throughout Jordan will save over the projection period millions of cubic meters of water, millions of JDs, and hundreds of lives – creating a compelling case for moving forward.

## 6.0 RECOMMENDATIONS

The Assessment Team presents the following recommendations for the process of designing the proposed project.

- Proceed with diligence and prioritization processes for SNBN expansion project
- Consider including support to institutionalize further SNBN within MOLA and municipalities, including such factors as:
  - Incorporation of SNBN into strategic priorities
  - Identification of key roles and development of role descriptions
  - Identification of competent employees to fill key roles
  - Estimation of resources needed to support SNBN efforts
- Consider including support to consider (and perhaps design) shared services (e.g., regional workshops to fabricate and repair sign materials) in order to ensure that all municipalities have access the full breadth and depth of resources needed to sustain their SNBN systems – particularly smaller municipalities which may not have the scale to perform all required functions on their own
- Consider including support to help organizations accelerate the way in which they capture (and perhaps expand further upon) the benefits identified in this Assessment, such as:
  - Digital enablement
  - Process and system adaptation
  - Organizational culture change
- Consider amplifying support for dedicated outreach, engagement, and education with local communities, civic organizations, and businesses – both (i) to enhance their awareness and capture of potential benefits and (ii) to mitigate potential risks and manage sensitivities proactively
- Capitalize on universal recognition of project's value to leverage stakeholder resources (e.g., coordination across GoJ and/or with other donors, engagement with private sector) – both financial (e.g., contribution to initial investment; subscription for annual access to comprehensive, updated national address data) and in-kind

## ANNEXES

### ANNEX I: ASSESSMENT STATEMENT OF WORK

#### JORDAN MONITORING, EVALUATION, AND LEARNING ACTIVITY (MELA)

#### Nationwide Street Naming and Building Numbering and

#### Municipal Local Economic Development in Jordan

##### 1. REQUESTING DO OFFICE

☐ DO 1: EDE

☐ DO4.1: Health

☐ DO5: Women & Youth

☐ DO 2: Water

☐ DO4.2: Education

☐ Other (specify):

☐ DO 3: DRG

☐ DO4.1: Vulnerable Pops

##### 2. PERFORMANCE PERIOD

Expected Start Date (on or about): August 2020

Anticipated End Date (on or about): November 2020 (Note: This is dependent upon when field work can begin given possible delays related to COVID-19)

##### 3. TYPE OF ANALYTIC ACTIVITY

Performance Evaluation

☐ Midterm

☐ Endline

☐ Other (specify):

##### 3.1 OTHER ANALYTIC ACTIVITIES

☐ Assessment

There will be two separate assessments and economic analysis (cost-benefit analysis) completed for two USAID-funded programs – Street Naming and Building Numbering (SNBN) and Local Economic Development (LED).

☐ Costing and/or Economic Analysis

##### 4. BACKGROUND

##### 4.1 DETAILS

Activity Name	SNBN under Cities Implementing Transparent, Innovative, and Effective Solutions (USAID/CITIES)
Activity Start / End Date	September 25, 2016 to September 24, 2021
Name of Prime Implementing Partner	Chemonics
Contract Number	AID-OAA-I-14-00062
Project/Activity Funding	\$58,594,993
Activity COR	Maha Abu Emier

##### 4.2 SNBN BACKGROUND

The USAID/Jordan Democracy, Rights and Governance (DRG) team is requesting the USAID/Jordan M&E Contractor (M&E Contractor) to undertake targeted assessments of the current and potential future economic benefits of two municipal economic development (LED) interventions implemented by the Cities Implementing Transparent, Innovative, and Effective Solutions (USAID/CITIES). The interventions include first creating detailed maps of Jordan's municipalities to support a nationwide Street Naming and Building Numbering (SNBN) project and piloting the implementation of systematic SNBN in several municipalities. The second intervention includes support to municipalities and governorates for Local Economic Development (LED) initiatives.

The Government of Jordan (GoJ) requested the SNBN and LED interventions as urgent national priorities to spur LED and create jobs, improve services, and support a transition to e-government. Systematic SNBN is the foundation for investment and service delivery improvement. The primary purpose of SNBN is to create addresses, which are logical and consistent and to ensure that properties can be located quickly in all situations. Systematic addressing enables emergency and care services to find a property quickly; mail and goods to be delivered efficiently; visitors to find where they want to go; reliable delivery of commercial services and products; and records of service providers to be kept in an efficient manner. Locally-led LED is a key foundation for investment and service delivery improvement. Municipalities for example have significant other assets, such as land and real property, that with proper planning and technical assistance can attract job-creating and revenue-generating investment.

As a result of the early successes of the SNBN and LED, the GoJ has expressed interest in taking both initiatives to their logical next steps. The GoJ wants to scale-up the pilot SNBN work nationwide, so that all 100 Jordanian municipalities have systematic addressing. The GoJ also wants to incorporate local development planning into its national planning, including outreach to international and private sector partners.

#### 4.3 THEORY OF CHANGE

##### THEORY OF CHANGE

**If USAID and other donors scale-up their investments in systematic SNBN and governorate and municipal-led LED, then Jordan's local communities will experience economic growth.**

##### SNBN GEOGRAPHIC COVERAGE

LED planning and SNBN mapping is nationwide. SNBN implementation will occur in 8 municipalities – Ajloun, Mafrqa, Jerash, Ramtha, Ayn Al Basha, Madaba, Salt and Karak.

- LED: All 100 municipalities will develop local development plans.
- SNBN mapping is in all 100 governorates.

*Implementation of Phase One:* Has been completed in the city centers of Greater Ajloun, Greater Jerash, and Greater Mafrqa.

*Implementation of Phase Two:* Includes the remaining areas of Greater Ajloun, New Ramtha, and Ayn Al-Basha. Provided the government travel restrictions related to the coronavirus are lifted, this phase (i.e., award) is expected to begin in April or May 2020 and completed around September 2020.

*Implementation of Phase Three:* Includes the remaining areas of the municipalities of Greater Jerash and Greater Mafrqa, and the municipalities of Greater Madaba, Greater Salt, Greater Karak (the Qasaba), and Ayn-Al-Basha (second of two parts). This phase (i.e., award) is expected to start in May, and to be completed by June 2021.

## 5. BACKGROUND PURPOSE, AUDIENCE & APPLICATION

### 5.1 PURPOSE

The purpose of the assessment is to undertake and to present separate analyses of the macro- and micro-economic benefits and costs of systematic SNBN and LED work implemented by USAID CITIES. Specifically, the assessment will contemplate the questions listed below. In addition, the Assessment team shall prepare a Base Case Economic Analysis with valuation of economic benefits and costs. As part of this work, the Assessment team shall design a Base Case Economic Analysis that evaluates economic costs and benefits, opportunity costs and externalities and assesses potential risks of the street numbering component. Further, the Assessment team together with input from USAID's contractor, shall develop an Excel document that presents a well-structured, easy to follow model for implementing SNBN in the remaining 92 municipalities. The Excel document should contain sheets with macroeconomic data, project input data, working sheets, results tables and results charts. The model shall be built in such a way that all essential input data can be modified within a reasonable range leading automatically to the respective results.

### 5.2 AUDIENCE

Findings from this assessment, with the deliverables (Base Case Economic Analysis Model and Excel worksheet(s) with SNBN implementing model) will present opportunities, challenges, lessons learned, and specific recommendations to inform the programmatic decisions of the GoJ, USAID, and other international and private sector partners, including:

- Ministry of Planning and International Cooperation
- Ministry of Local Administration Municipal Affairs, Ministry of Interior
- Cities and Villages Development Bank
- Municipalities
- Governorates
- European Investment Bank (EIB)
- CITIES
- USAID/Jordan
- Donors

### 5.3 APPLICATIONS AND USE

Findings from this assessment, with the Base Case Economic Analysis Model and Excel SNBN implementing model worksheet(s) will be used to plan and fund rollout and scale up of SNBN to all municipalities in Jordan. Funding for the full scale up is possible from multiple sources including other donors, following information provided through these assessments and accompanying deliverables.

## 6. EVALUATION/ASSESSMENT QUESTIONS

- Questions should be a) aligned with the evaluation/assessment purpose and the expected use of findings; b) clearly defined to produce needed evidence and results; and c) answerable given the time and budget constraints. The following disaggregation (e.g., sex, geographic locale, age, etc.), must be incorporated into the evaluation/assessment questions.
- State the method and/or data source and describe the data elements needed to answer the assessment questions.



	Evaluation/Assessment Question
1	What are the Jordanian and international comparative experiences of implementing systematic SNBN and investing in LED, and to what extent can these two interventions contribute to sustainable Gross Domestic Product (GDP) growth in Jordan?
2	What are the specific and quantifiable economic and financial benefits and costs to implementation of SNBN nationwide in Jordan?
3	Compare the benefits and costs, and produce the Economic Internal Rate of Return (EIRR) and Economic Net Present Value (ENPV) calculations associated with the scaling up of SNBN nationwide, based on the initial estimates prepared by USAID, including maintenance and repair costs and for any additional obligations of property owners?
4	What are the micro- and macro-economic benefits and challenges related to investing in LED opportunities identified through USAID/CITIES's LED with respect to: <ul style="list-style-type: none"> <li>▪ Business Enabling Environment</li> <li>▪ Investment Promotion and Facilitation</li> <li>▪ Public Private Partnerships</li> <li>▪ Job Creation</li> </ul> Micro, Small and Medium Enterprise (MSME) Growth
5	Of LED opportunities identified by USAID/CITIES through its activities, which type of opportunities are the most likely to result in economic growth and the creation of jobs in local communities?

## 7. METHODS

### 7.1 GENERAL COMMENTS RELATED TO THE METHODS

The purpose of this research will be to gauge the perspectives and priorities of GoJ, sub-national, and non-governmental stakeholders, including the private sector on the potential economic benefits and costs of SNBN and LED investments. This will be done through qualitative and quantitative research designed to determine the costs and benefits of the SNSB and LED programs through necessary site visits, especially to areas where SNBN has been implemented. As part of this data collection, where relevant, interviews will also be conducted with principal GoJ beneficiaries of USAID and other donors' assistance in the areas of SNBN and LED work.

Below is a summary of the scope and methodology for the assessment of the economic benefits and best practices for SNBN and LED work.

### 7.2 DOCUMENT AND DATA REVIEW

The Assessment team shall conduct a desk review of all relevant documents and studies. This desk review will be used to provide background information on the SNBN and LED activities, and will also provide data for analysis for this assessment. Documents and data to be reviewed include:

- Relevant GoJ strategic planning for economic growth, public service delivery, and jobs creation; new industrial zones, etc. technical approaches for and reporting about USAID/CITIES SNBN and LED planning intervention; and reporting about international experiences for implementing SNBN and LED planning.
- Review of Jordan specific policy and academic data and literature in the following micro- and macro-economic focus areas/themes of interest:
  - Municipal governance
  - Governance Decentralization
  - E-government/automation
  - Business Enabling Environment

- Public Private Partnerships
- Joint Ventures
- Investment Promotion and Facilitation
- Municipal Fixed Assets
- Municipal Bonds
- Property valuation and local tax system
- Link to Geographic Information System and cadastral system
- Employment
- Reviews relevant USAID activity documents and studies and data generated by those activities
- EIB's The Economic Appraisal of Investment Projects at the EIB

### 7.3 INTERVIEWS OF KEY INFORMANTS AND PURPOSE OF INQUIRY

This assessment will have five primary sets of respondents: 1) stakeholders from the GoJ; 2) governorate and municipal government bodies; and 3) non-government actors, including the private sector. In addition to these respondents, where appropriate, other 4) Donors and key stakeholders (Donors and beneficiaries, including USAID, SNBN Implementing Partners (IPs), and EIB); and 5) subject matter experts will also be interviewed. Where relevant, the beneficiaries and key informants of relevant USAID activities should also be systematically covered during the data collection phase.

- 1) GoJ Representatives from:
  - Ministry of Planning and International Cooperation
  - Ministry of Municipal Local Administration Affairs
  - Ministry of Interior
  - Cities and Villages Development Bank
- 2) Governorate and municipal leaders [CITIES will provide list of informants]
  - Several
- 3) Non-governmental actors:
  - Academia
  - Advocacy leaders
  - Private sector (representatives from Jordanian and international firms)
- 4) Donors supporting SNBN and LED in Jordan:
  - USAID
  - EIB
  - GoJ
- 5) SNBN subject matter experts
  - CITIES technical staff
  - Ministry technical staff
  - Municipal technical staff

### 7.4 GROUP INTERVIEWS

Key informants may be interviewed in small groups of similar respondents, as long as all participants feel free to express their own opinions. Gender and group (NGOs, Government) typologies will be separated into different focus groups to enable participants to fully exercise their "voice".

### 7.5 SURVEY

A survey of the GoJ will start with qualitative in-depth discussions with members of the GoJ, including the Ministry of Planning and International Cooperation, Ministry of Municipal Affairs, Local Administration, Ministry of Interior, and the Cities and Villages Development Bank. A similar survey will be conducted with local businesses. The qualitative research will be used to gauge the GoJ perspectives, as well as to finalize the quantitative survey instrument to be used for the representative survey of the GoJ. The survey will include both quantitative questions (e.g., multiple choice, Y/N, Likert ratings, etc.) and use random survey methodology and open-ended qualitative questions.

## 7.6 OBSERVATIONS

Observations will include:

- SNBN mapping fieldwork and implementation sites
- Municipal-led economic development projects (CITIES can provide examples)
- Current activities at the LED sites
- Other observations as they occur

## 7.7 COST ANALYSIS

- Analyses of the macro- and micro-economic benefits and costs of systematic SNBN and LED work implemented by USAID CITIES
- Base Case Economic Analyses with valuation of economic and financial benefits and costs by evaluating economic costs and benefits, opportunity costs and externalities and assessing potential risks.

## 7.8 OTHER

Map of Donor Activities – list of all the current donor and GOJ activities in Jordan related to SNBN and LED planning.

## 8. HUMAN SUBJECT PROTECTION

The Assessment Team must develop protocols to insure privacy and confidentiality prior to any data collection. Primary data collection must include a consent process that contains the purpose of the assessment, the risk and benefits to the respondents and community, the right to refuse to answer any question, and the right to refuse participation in the assessment at any time without consequences. Only adults can consent as part of this assessment. **Minors cannot be respondents to any interview or survey and cannot participate in a focus group discussion without going through an International Research Board (IRB).** The only time minors can be observed as part of this assessment is as part of a large community-wide public event, when they are part of family and community in the public setting. During the process of this assessment, if data are abstracted from existing documents that include unique identifiers, data can only be abstracted without this identifying information.

An Informed Consent statement included in all data collection interactions must contain:

- Introduction of facilitator/note-taker
- Purpose of the evaluation/assessment
- Purpose of interview/discussion/survey
- Statement that all information provided is confidential and information provided will not be connected to the individual
- Right to refuse to answer questions or participate in interview/discussion/survey
- Request consent prior to initiating data collection (i.e., interview/discussion/survey)

## 9. ANALYTIC PLAN

The analysis from the desk review and primary data collection will generate two analyses: one focused on the key questions and directions with respect to SNBN; and a second that presents an analysis for municipalities leading LED. Both analyses will map out donor activities, identify a series of top priority areas, and lessons learned that are expected to lead to the achievement of USAID development objectives. Both analyses also will identify relevant interventions and approaches that have proven effective in promoting the ultimate goals for the nationwide implementation of SNBN and leveraging municipal governments to lead LED. In doing so, each analysis will capture lessons learned for future programming purposes. The two analyses derived from the assessment will inform the programmatic decisions of the GOJ, USAID, and other international and private sector partners, such as the EIB.

All analyses will be geared to answer the assessment questions. Quantitative data will be analyzed primarily using descriptive statistics. Data will be stratified by demographic characteristics, such as sex, age, and location, whenever feasible. Other statistical test of association (i.e., odds ratio) and correlations will be run as appropriate.

Thematic review of qualitative data will be performed, connecting the data to the assessment questions, context assessment, interpretation, nuances and homogeneity and outliers to better explain what is happening and the perception of those involved. Qualitative data will be used to substantiate or explain the quantitative findings, provide more insights than quantitative data can provide, and answer questions where other data do not exist.

Use of multiple methods that are quantitative and qualitative, as well as existing data (e.g., CITIES performance data, LED budgets, etc.) will allow the Team to triangulate findings to produce more robust and credible assessment results.

## 10. ACTIVITIES

### 10.1 DESK REVIEW

Several documents are available for review for this assessment. These include CITIES SNBN and LED plans and reports, GOJ strategic planning for economic growth, EIB economic analysis models, other papers on Jordan governance and economic growth at the local governate and municipal level, etc. This desk review will provide background information for the Assessment Team and will be used as data input and evidence for the assessment.

### 10.2 TEAM PLANNING MEETING (TPM)

A four-day team planning meeting (TPM) will be held at the initiation of this assignment and before the data collection begins. The TPM will:

- Review and clarify any questions on the assessment scope of work (SOW)
- Clarify team members' roles and responsibilities
- Establish a team atmosphere, share individual working styles, and agree on procedures for resolving differences of opinion
- Review and finalize assessment questions
- Review and finalize the assignment timeline
- Develop data collection methods, instruments, tools and guidelines
- Review and clarify any logistical and administrative procedures for the assignment
- Develop a data collection plan
- Draft the assessment work plan for USAID's approval
- Develop a preliminary draft outline of the team's report
- Assign drafting/writing responsibilities for the final report

### 10.3 BRIEFING AND DEBRIEFING MEETINGS

Throughout the assessment the Team Lead will provide briefings to USAID. The In-Brief and Debrief are likely to include all Assessment Team experts but will be determined in consultation with the Mission. These briefings are:

- *Assessment launch.* The launch will consist of a call/meeting among the USAID, MELA and the Team Lead to initiate the assessment activity and review expectations. USAID will review the purpose, expectations, and agenda of the assignment. MELA will introduce the Team Lead and review the initial schedule and review other management issues.
- *In-brief with USAID.* Prior to the beginning of the TPM, the Assessment Team will meet with USAID to discuss expectations, review assessment questions, and intended plans. The Team will also raise questions that they may have about the area of focus for this assessment and SOW, particularly resulting from their background document review. The time and place for this in-brief will be determined between the Team Lead and USAID.
- *Workplan and methodology review briefing.* At the end of the TPM, the Assessment Team will meet with USAID to present an outline of the methods/protocols, timeline and data collection tools. Also, the format and content of the Assessment report(s) will be discussed.
- *In-brief with USAID and IP* to review the assessment plans and timeline, and for the project to give an overview of the project to the Assessment Team.
- *Initial briefing for the EIB* and review of their economic analysis model.
- The Team Lead (TL) will brief the USAID *weekly* to discuss progress on the assessment. As preliminary findings arise, the TL will share these during the routine briefing, and in an email.
- *A final debrief* between the Assessment Team and USAID will be held at the end of the assessment to present preliminary findings to USAID. During this meeting a summary of the data will be presented, along with high level findings and draft recommendations. For the debrief, the Assessment Team will prepare a PowerPoint Presentation of the key findings, issues, and recommendations. The Assessment team shall incorporate comments received from USAID during the debrief in the assessment report. (Note: preliminary findings are not final, as data analyses are completed these findings may change.)
- *IP and Stakeholders' debrief/workshop* will be held with the project staff and other stakeholders identified by USAID. This will occur following the final debrief with the Mission and will not include any information that may be procurement deemed sensitive or not suitable by USAID. This workshop can also be an assessment validation exercise, as needed.

### 10.4 FIELDWORK, SITE VISITS AND DATA COLLECTION

The Assessment team will conduct site visits for data collection. Selection of sites to be visited will be finalized during TPM in consultation with USAID. The Assessment team will outline and schedule key meetings and site visits prior to departing to the field.

### 10.5 ASSESMENT REPORT

The Assessment Team under the leadership of the Team Lead will develop a report with findings and recommendations (see Analytic Report below). Report writing and submission will include the following steps:

1. Team Lead will submit draft assessment report to MELA for review and formatting
2. MELA will submit the draft report to USAID
3. USAID will review the draft report in a timely manner, and send their comments and edits back to MELA
4. USAID will manage implementing partner(s)'s (IP) review of the report and compile and send their comments and edits to MELA with the IP's input.
5. MELA will share USAID's comments and edits with the Team Lead, who will then do final edits, as needed, and resubmit to MELA

6. MELA will review and reformat the final Assessment Report, as needed, and resubmit to USAID for approval.
7. Once Assessment Report is approved, MELA will re-format it for 508 compliance and post it to the Development Experience Clearinghouse (DEC) and will also post it to the Jordan Development Knowledge Management Portal (KaMP).

The Assessment Report excludes any procurement-sensitive and other sensitive but unclassified (SBU) information. This information will be submitted in a memo to USAID separate from the Assessment Report.

## 10.6 DATA SUBMISSION

All quantitative data collected as part of this assessment will be submitted to MELA in a machine-readable format (CSV or XML). The datasets created as part of this assessment must be accompanied by a data dictionary that includes a codebook and any other information needed for others to use these data. It is essential that the datasets are stripped of all identifying information, as the data will be public once posted on USAID Development Data Library (DDL).

Where feasible, qualitative data that do not contain identifying information should also be submitted to MELA.

## 11. DELIVERABLES AND PRODUCTS

These deliverables are contingent on GOJ policies and restrictions on travel and economic opening due to COVID-19. Due to delays generated by COVID 19, the dates may be subject to change, but the sequencing of the evaluation events will remain the same.

Deliverable / Product	Timelines & Deadlines (estimated)
Launch briefing	June 21, 2020
In-brief with USAID	June 22, 2020
Workplan and methodology review briefing	June 29, 2020
Workplan (must include questions, methods, timeline, data analysis plan, and instruments)	July 5, 2020
In-brief with target project / program	July 6, 2020
Routine briefings	Weekly
Preliminary debrief with USAID with Power Point presentation	July 28, 2020
Draft Base Case Economic Analysis Model	July 12, 2020
Draft Excel worksheet(s) with SNBN implementing model	July 19, 2020
Debrief with USAID with Power Point presentation, including Base Case Econ Model & SNBN implementing model	July 20, 2020
IP & stakeholders findings review workshop with Power Point presentation	July 21, 2020



Draft reports on current and potential future economic benefits of: 1. LED investments and services linked to SNBN 2. SNBN mapping and implementation	Submit to MELA: August 6, 2020 MELA submits to USAID: August 12, 2020 USAID provides feedback: August 27, 2020
Final Base Case Economic Analysis Model	August 14, 2020
Final Excel worksheet(s) with SNBN implementing model	August 14, 2020
Final reports on current and potential future economic benefits of: 1. LED investments and services linked to SNBN 2. SNBN mapping and implementation	Submit to MELA: September 2, 2020 MELA submits to USAID: September 8, 2020 USAID approves technical content: September 23, 2020
Raw data (cleaned datasets in CSV or XML with codesheet)	September 8, 2020
Report(s) Posted to the DEC and KaMP	Sept 28, 2020

### 11.1 ESTIMATED USAID REVIEW TIME

Average number of business days USAID will need to review the Report? 10 Business days

## 12. SNBN TEAM COMPOSITION, SKILLS AND LEVEL OF EFFORT (LOE)

### 12.1 TEAM LEAD

This person will be selected from among the key staff and will meet the requirements of both this and the other position. The team lead should have significant experience conducting project evaluations and/or assessments, as well as program design.

#### Roles & Responsibilities

The team leader will be responsible for (1) providing team leadership; (2) managing the team's activities, (3) ensuring that all deliverables are met in a timely manner, (4) serving as a liaison between the USAID and the Assessment team, and (5) leading briefings and presentations.

#### Qualifications

- Minimum of 10 years of experience in economic development, which included experience in implementation of economic growth and development activities in developing countries
- Demonstrated experience leading economic development sector project/program evaluation/assessments, utilizing both quantitative and qualitative methods

- Demonstrated experience in program design for USAID and other donors
- Extensive experience working with government officials at all levels
- Excellent skills in planning, facilitation, and consensus building
- Excellent interpersonal skills, including experience successfully interacting with host government officials, civil society partners, and other stakeholders
- Excellent skills in project management
- Excellent organizational skills and ability to keep to a timeline
- Good writing skills, with extensive report writing experience
- Experience working in the region; Jordan is desirable
- Familiarity with USAID
- Familiarity with other donors is desirable

## 12.2 ASSESSMENT/PUBLIC/MUNICIPAL FINANCE SUBJECT MATTER EXPERT (SME)

### Roles & Responsibilities

Serve as a member of the Assessment team, providing quality assurance on analytic issues, including methods, development of data collection instruments, protocols for data collection, data management and data analysis. S/He will oversee the training of all engaged in data collection, ensuring highest level of reliability and validity of data being collected. S/He is the lead analyst, responsible for all data analysis, and will coordinate the analysis of all data, assuring all quantitative and qualitative data analyses are done to meet the needs for this assessment. S/He will participate in all aspects of the assessment, from planning, data collection, data analysis to report writing. Due to the health crisis and uncertainty for international travel, travel is not anticipated for the Assessment and Public/Municipal Finance Subject Matter Expert. Rather, the Expert will provide virtual guidance and technical expertise alongside the Team Leader to the two Jordan based Local Researchers

### Qualifications

- At least 10 years of experience in USAID M&E procedures and implementation
- At least 5 years managing M&E, including evaluations and/or assessments
- Experience in design and implementation of evaluations and/or assessments
- Strong knowledge, skills, and experience in qualitative and quantitative analytic tools
- Experience implementing and coordinating others to implement surveys, key informant interviews, focus groups, observations and other evaluation and assessment methods that assure reliability and validity of the data
- Experience in data management
- Able to analyze quantitative data, which will be primarily descriptive statistics and cross-tabulations
- Able to analyze qualitative data, and guiding others in qualitative data collection and analysis
- Experience using analytic software
- Demonstrated experience using qualitative evaluation/assessment methodologies, and triangulating with quantitative data
- Experience conducting secondary analysis of existing quantitative and economic/financial datasets
- Able to review, interpret and reanalyze as needed existing data pertinent to the assessment
- Strong data interpretation and presentation skills

- Proficient in written and spoken English, and Arabic is desirable
- Good writing skills, including experience writing evaluation and/or assessment reports

### 12.3 OTHER STAFF WITH ROLES & RESPONSIBILITIES

**Local Researchers** (2 consultants) to assist the Assessment Team with data collection, analysis and data interpretation. They will have basic familiarity with economic growth and development topics, as well as experience conducting surveys, interviews, and focus group discussion, both facilitating and note taking. They will also assist in preparation of data collection tools and transcripts, as needed. Local Data Collectors will also assist with logistics and administrative tasks, including arranging lodging, transportation, meeting and workspace (as needed), and setting appointments, and supporting the team with business center support (e.g. copying, internet, and printing). The Local Data Collectors will have a good command of English and Arabic. They will also assist the Team and the Logistics Coordinator, as needed. They will report to the Team Lead.

Will USAID participate as an active team member or designate other key stakeholders to as an active team member? This will require full time commitment during the assessment activity.

☐ Full member of the Assessment Team (including planning, data collection, analysis and report development) – If yes, specify who:

☐ Some Involvement anticipated – If yes, specify who:

☐ No

### 12.4 STAFFING LEVEL OF EFFORT (LOE) MATRIX

Level of Effort in *days* for each Evaluation/Analytic Team member.

Activity / Deliverable		Assessment Team		
		Team Lead	Assessment Specialist/SME	Local Researchers (each)
Number of persons →		1	1	2
1	Launch Briefing	1		
2	Desk review	5	5	2
3	In-brief with Mission	0.5	0.5	0.5
4	Team Planning Meeting	4	4	4
5	Workplan and methodology briefing with USAID	0.5	0.5	0.5

6	Finalize & submit Assm't planning deliverables: 1) workplan with timeline, assm't matrix, protocol (methods, sampling & analytic plan); 2) data collection tools	1	1	1
7	In-brief with CITIES	0.5	0.5	0.5
8	Data Collection Workshop (protocol orientation/quality control/training for all data collectors)	2	2	2
9	Prep / Logistics for Site Visits	0.5	0.5	0.5
10	Data collection / Site Visits (including travel to sites)	15	1	17
11	Data analysis	5	5	10
12	Draft and submit Base Case Economic Analysis Model	5	5	3
13	Draft and submit Excel worksheet(s) with SNBN implementing model	5	5	3
14	USAID reviews Base Case Economic Model and SNBN implementing model spreadsheet	N/A		
15	Debrief with Mission with prep	1	1	1
16	IP & Stakeholder debrief workshop with prep	1	1	1
17	Draft report(s) on current and potential future economic benefits of: <ul style="list-style-type: none"> <li>1. LED investments and services linked to SNBN</li> <li>2. SNBN mapping and implementation</li> </ul>	10	6	4
18	Revise and submit Base Case Economic Model and SNBN implementing model spreadsheet	7	5	1
19	MELA Report QC Review & Formatting	N/A – will be completed by the MELA team		
20	Submission of draft report(s) to Mission			
21	USAID Report Review			
22	Revise report(s) per USAID comments	6	2	1
23	Finalize and submit reports, Base Case Economic Model, and SNBN Implementing model spreadsheet to USAID	N/A – will be completed by the MELA team		

24	USAID approves report			
25	Final copy editing and formatting			
26	508 Compliance editing			
27	Eval Report(s) to the DEC			
	Total LOE per person	70	45	54
	Total LOE	70	45	108

A 6-day workweek permitted, as needed

☐ Yes

☐ No

### 13. TRAVEL REQUIREMENTS

MELA requests travel in Amman, 8 SNBN pilot municipalities, several governorates, several non-SNBN municipalities.

### 14. MELA ROLES AND RESPONSIBILITIES

MELA will coordinate and manage the evaluation/Assessment team and provide quality assurance oversight, including:

- Review SOW and recommend revisions as needed
- Provide technical assistance on methodology, as needed
- Develop budget for analytic activity
- Recruit and hire the evaluation/Assessment team, with USAID point of contact (POC) approval
- Arrange international travel and lodging for international consultants
- Request for country clearance and/or facility access (if needed)
- Review methods, workplan, analytic instruments, reports and other deliverables as part of the quality assurance oversight
- Provide office space and logistics management while in Jordan
- Report production - If the report is public, then coordination of draft and finalization steps, editing/formatting, 508ing required in addition to and submission to the DEC and posting on KaMP website. If the report is internal, then copy editing/formatting for internal distribution.
- 

### 15. USAID ROLES AND RESPONSIBILITIES

Below is the standard list of USAID's roles and responsibilities. Add other roles and responsibilities as appropriate.

#### 15.1 Before Field Work

- SOW
  - Develop SOW
  - Peer Review SOW
  - Respond to queries about the SOW and/or the assignment at large
- *Consultant Conflict of Interest (COI)*. To avoid conflicts of interest or the appearance of a COI, review previous employers listed on the CV's for proposed consultants and provide

additional information regarding potential COI with the project contractors evaluated/assessed and information regarding their affiliates.

- *Documents.* Identify and prioritize background materials for the consultants and provide them to MELA, preferably in electronic form, at least one week prior to the inception of the assignment.
- *Local Consultants.* Assist with identification of potential local consultants, including contact information.
- *Site Visit Preparations.* Provide a list of site visit locations, key contacts, and suggested length of visit for use in planning in-country travel and accurate estimation of country travel line items costs.
- *Lodgings and Travel.* Provide guidance on recommended secure hotels and methods of in-country travel (i.e., car rental companies and other means of transportation).

## 15.2 During Field Work

- *Mission Point of Contact.* Throughout the in-country work, ensure constant availability of the Point of Contact person and provide technical leadership and direction for the team's work.
- *Meeting Space.* Provide guidance on the team's selection of a meeting space for interviews and/or focus group discussions (i.e. USAID space if available, or other known office/hotel meeting space).
- *Meeting Arrangements.* Assist the team in arranging and coordinating meetings with stakeholders.
- *Facilitate Contact with Implementing Partners.* Introduce the analytic team to implementing partners and other stakeholders, and where applicable and appropriate prepare and send out an introduction letter for team's arrival and/or anticipated meetings.

## 15.3 After Field Work

- *Timely Reviews.* Provide timely review of draft/final reports and approval of deliverables.

## 16. EVALUATION/ASSESSMENT REPORT

Although this is not an evaluation, the criteria used for the two evaluation reports will be applied to this assessment; therefore, the Assessment Final Report must follow USAID's Criteria to Ensure the Quality of the Evaluation Report (found in Appendix I of the [USAID Evaluation Policy](#)).

### 16.1 USAID CRITERIA to Ensure the Quality of the Evaluation Report (USAID ADS 201):

- Evaluation reports should be readily understood and should identify key points clearly, distinctly, and succinctly.
- The Executive Summary of an assessment report should present a concise and accurate statement of the most critical elements of the report.
- Assessment reports should adequately address all assessment questions included in the SOW, or the assessment questions subsequently revised and documented in consultation and agreement with USAID.
- Assessment methodology should be explained in detail and sources of information properly identified.



- Limitations to the assessment should be adequately disclosed in the report, with particular attention to the limitations associated with the assessment methodology (selection bias, recall bias, unobservable differences between comparator groups, etc.).
- Assessment findings should be presented as analyzed facts, evidence, and data and not based on anecdotes, hearsay, or simply the compilation of people's opinions.
- Findings and conclusions should be specific, concise, and supported by strong quantitative or qualitative evidence.
- If assessment findings assess person-level outcomes or impact, they should also be separately assessed for both males and females.
- If recommendations are included, they should be supported by a specific set of findings and should be action-oriented, practical, and specific.

**Reporting Guidelines:** The draft reports should be a comprehensive analytical evidence-based assessment report. It should detail and describe results, effects, constraints, and lessons learned, and provide recommendations and identify key questions for future consideration. The report shall follow USAID branding procedures. *The report will be edited/formatted and made 508 compliant as required by USAID for public reports and will be posted to the USAID/DEC.* This report will also be posted on Jordan Development KaMP website.

The findings from the assessments will be presented in draft reports at a full briefing with USAID and at a follow-up meeting with key stakeholders. The report should use the following format:

- Abstract: briefly describing what was evaluated, assessment questions, methods, and key findings or conclusions (not more than 250 words)
- Executive Summary: summarizes key points, including the purpose, background, assessment questions, methods, limitations, findings, conclusions, and most salient recommendations (2-5 pages)
- Table of Contents (1 page)
- Acronyms
- Assessment Purpose and Assessment Questions: state purpose of, audience for, and anticipated use(s) of the assessment (1-2 pages)
- Project [or Program] Background: describe the project/program and the background, including country and sector context, and how the project/program addresses a problem or opportunity (1-3 pages)
- Assessment Methods and Limitations: data collection, sampling, data analysis and limitations (1-3 pages)
- Findings (organized by Assessment Questions): substantiate findings with evidence/data
- Conclusions
- Recommendations
- Annexes
  - Annex I: Assessment Statement of Work
  - Annex II: Assessment Methods and Limitations ((if not described in full in the main body of the assessment report)
  - Annex III: Data Collection Instruments
  - Annex IV: Sources of Information
    - List of Persons Interviews
    - Bibliography of Documents Reviewed
    - Databases
  - Annex V: Statement of Differences (if applicable)

- Annex VI: Disclosure of Any Conflicts of Interest
- Annex VII: Summary information about Assessment team members, including qualifications, experience, and role on the team.

The assessment methodology and report will be compliant with the [USAID Evaluation Policy](#) and [Checklist for Assessing USAID Evaluation Reports](#). The Assessment Report should exclude any potentially procurement-sensitive information. As needed, any procurement sensitive information or other sensitive but unclassified (SBU) information will be submitted in a memo to USAID separate from the Assessment Report.

All data instruments, data sets (if appropriate), presentations, meeting notes and report for these two assessments/analyses will be submitted electronically to the MELA Program Manager. All datasets developed as part of this assessment will be submitted to MELA in an unlocked machine-readable format (CSV or XML). The datasets must not include any identifying or confidential information. The datasets must also be accompanied by a data dictionary that includes a codebook and any other information needed for others to use these data. Qualitative data included in this submission should not contain identifying or confidential information. Category of respondent is acceptable, but names, addresses and other confidential information that can easily lead to identifying the respondent should not be included in any quantitative or qualitative data submitted.

#### 17. USAID CONTACTS

	Primary Contact	Alternate Contact	Technical Contact 1	Technical Contact 2
Name:	Rand Milhem	Anna Karmandarian	Brendan M Wheeler	Maha Abu Emier
Title:	Development Program Specialist - Monitoring and Evaluation	Development Program Specialist - Monitoring and Evaluation	Office of Democracy, Rights and Governance	Project Management Specialist
Mission Office	Office of Program Management	Office of Program Management	Office of Democracy	Office of Democracy
Email:	<a href="mailto:rmilhem@usaid.gov">rmilhem@usaid.gov</a> <a href="mailto:vbwheeler@usaid.gov">vbwheeler@usaid.gov</a>	<a href="mailto:akarmandarian@usaid.gov">akarmandarian@usaid.gov</a>	<a href="mailto:bwheeler@usaid.gov">bwheeler@usaid.gov</a>	<a href="mailto:mabuemier@usaid.gov">mabuemier@usaid.gov</a>
Telephone:	(962-6) 590 6675	(962-6) 5906046	(962-6) 5906412	(962-6) 5907469
Cell Phone:	(962-79) 687 6307	(962-79) 6820360	(962-79) 8857914	(962-79) 5631561

## ANNEX II: DATA COLLECTION INSTRUMENTS

SNBN conducted a series of interviews that are listed in this section. For the first round of interviews, a standard questionnaire was applied to different companies across different sectors (mobile, delivery & postal, financial, electricity, water, emergency, and health care services). Although the main questionnaire follows the same rationale, it was slightly tailored to the different types of service-delivery companies that were interviewed for this evaluation.

Under this first round, SNBN interviewed the following stakeholders:

- Aqaba Water Company
- Arab Bank
- Aramex
- Aqaba Special Economic Zone (ASEZA)
- Emergency Services
- Irbid District Electricity Distribution Company
- Jordan Breast Cancer Program
- Jordan Post Company
- Jordan Royal Geographic Center
- Delivery Services
- Orange

Additionally, SNBN complemented the data collection process by conducting supplementary interview guides which can be found at the bottom of this section.

Under this second round, SNBN interviewed the following stakeholders:

- Jordan Electricity Company
- Orange
- Income & Sales Tax Department, North Amman Directorate
- VTEL
- Directorate of Legal Affairs
- CITIES
- 

### ROUND 1: MAIN QUESTIONNAIRE

1. Name of Organization
2. Name of interviewee
3. Position:
4. How long have you been at Yarmouk Water Company?
5. Where do you supply water?

### Awareness of Street Naming and Building Numbering (SNBN)

6. Are you aware of Street Naming and Building Numbering initiatives taking place in Jordan?
7. Yes / No

Comment:

8. Are you prevented from operating effectively because of the lack of street numbering?
9. Were you involved in the decision for Cities or GAM project to engage in an SNBN initiative?  
Yes/No
10. If yes, please let us know your engagement in the process.
11. How satisfied are you that SNBN was a good decision and value for money?
12. To your knowledge, is SNBN part of any documented national strategy?
13. What recommendations would you make to enhance the SNBN initiative in Jordan?

## Benefits of SNBN

### General Benefits

14. Can you please score the following benefits in order of importance?

	Question	Answer	Confidence that you are correct (Circle)					
1	It will help people to find us more easily	True/False	50%	60%	70%	80%	90%	100%
2	It will help us to find our way around our activities	True/False	50%	60%	70%	80%	90%	100%
3	It will make it easier to work with our bank	True/False	50%	60%	70%	80%	90%	100%
4	It will make it easier to fill in government forms	True/False	50%	60%	70%	80%	90%	100%

15. Are there any other benefits / other comments?

### Impact of SNBN on doing business

16. Is SNBN necessary for performing your jobs?

5= Strongly agree

4 = Agree

3 = Not sure / Do not know

2 = Disagree

1= Strongly disagree

17. Can you describe the impacts of SNBN on your job?

18. To what extent the SNBN has improved the quality of delivering your services

4 = a great extent

3 = to a moderate extent

2 = to a small extent

1= not at all

19. Do you decline providing any service if SNBN does not exist?

Yes/No

20. If YES, what are the services?

21. Is there any difference(s)/difficulties/challenges between delivering your services in Aqaba and out of Aqaba?

### Economic Benefits of SNBN

22. From your point of view, do you think that the SNBN will impact the tax collection system and revenue generation? Please explain

23. What do you think are the main economic benefits of street numbering? If you don't have answer just write "I don't know or not Sure in the Score column"

	Question	Score	Confidence that you are correct (Circle)

1	SNBN will make emergency services more efficient	True/False	50%	60%	70%	80%	90%	100%
2	SNBN will enable delivery services and e-commerce	True/False	50%	60%	70%	80%	90%	100%
3	SNBN will enable E-government	True/False  Do not know	50%	60%	70%	80%	90%	100%
4	SNBN will help to create jobs in SNBN enabled areas	True/False	50%	60%	70%	80%	90%	100%
5	SNBN will help to create investment in SNBN enabled areas	True/False	50%	60%	70%	80%	90%	100%
6	SNBN will improve social development in SNBN enabled areas	True/False	50%	60%	70%	80%	90%	100%
7	SNBN will directly enable economic development in SNBN enabled areas	True/False	50%	60%	70%	80%	90%	100%
8	SNBN will help to increase exports from SNBN enabled areas	True/False	50%	60%	70%	80%	90%	100%
9	SNBN will help to increase the number of business start-ups in the area	True/False	50%	60%	70%	80%	90%	100%
10	SNBN will improve Access to Finance in the area	True/False	50%	60%	70%	80%	90%	100%
11	SNBN will increase the impact of other Local Economic Development initiatives	True/False	50%	60%	70%	80%	90%	100%

24. Are there any other benefits / other comments?

25. In what ways do you operate to compensate for the lack of accurate street addresses in dealing with your clients?

26. Do you have anything else you would like to tell us regarding to the SNBN initiative in Jordan?

Many thanks for your kind cooperation; we really appreciate your time and effort in completing the survey.

END OF MAIN QUESTIONNAIRE

The above main questionnaire was applied as is to:

Aqaba Water Company, Irbid District Electricity Distribution Company, Miyahuna

In addition to the previously outlined standard questionnaire, the following sections were specifically tailored and allocated as follows:

Arab Bank

Impact of SNBN on contracting

Question	Yes	No
We insist on a fully accurate address including street number		
We are happy to accept a description of the location of the client's address?		
We will provide credit more readily to a client with a fully numbered street address		
The fully numbered street address does not make much difference to us		
We do not operate in areas where there is no street naming or numbering		
Street Naming and numbering would influence our decision to start operating in these locations		
We will not provide credit to anyone who does not have a fully numbered street address		

Arab Bank, Aramex

1. If street numbering were introduced to a new locality, where you do not currently operate, would you consider expanding your operation into this area?

1= street numbering makes no difference to us

2 = Street numbering makes little difference

3 = Do not know

4 = perhaps

5= Definitely



#### Aqaba Special Economic Zone (ASEZA) SNBN Directorate

1. From your point of view, do you think that the SNBN will impact the tax collection system and revenue generation? Please explain
2. What are the impacts of SNBN on tourism?
3. What are the impacts of SNBN on collecting utilities bills?
4. What are the impacts of SNBN on emergency, fire and police services?
5. Finally do you have any studies, statistics or data related to the impacts of SNBN?
6. Date of Interview:

#### Interview Questionnaire for Emergency Services

##### Location

1. Do you work in areas with Street naming and building numbering Yes / No

##### Number of vehicles

2. Number of Staff engaged in direct response:

##### Response Time Data

3. Do you have data related to the average response time to an emergency? Yes / No
4. If it is an SNBN area and data is available gain access to the statistics and calculate the improvement in response time from before SNBN was introduced

##### If data is not available

5. By what percentage do you think that response time would improve is systematic street numbering were available?

5%

10%

15%

20%

25%

30%

35%

40%

45%

50%

##### Fuel Consumption

6. Do you have data related to Fuel Consumption? Yes / No
7. What is your annual Fuel Consumption?                      Liters
8. What is your annual spend on fuel (JOD)?
9. If it is an SNBN area and data is available gain access to the statistics and calculate the improvement in fuel consumption from before SNBN was introduces

If data is not available:

10. By what percentage do you think that response time would improve if systematic street numbering were available?

- 5%
- 10%
- 15%
- 20%
- 25%
- 30%
- 35%
- 40%
- 45%
- 50%

#### Vehicle Maintenance

11. What is your annual cost of vehicle maintenance?

#### Patient Data (Ambulance Services Only)

12. Number of Patients carried in a year?

13. Breakdown of Call out data – (As available)

14. Classified according to Response Codes: (Overwrite response target) Reclassify as appropriate.

Code	Meaning	Type of Call	Response Target	Response Actual
1	Immediate Life Threat	Cardiac arrests, Choking, Unconscious, Continuous seizure, Not alert after fall or trauma, Allergic reaction with breathing problems, Major Incidents		
2	Emergency	Stroke, Fainting – not alert, Chest pain, Road traffic collisions, Major burns, sepsis		
3	Urgent	Falls, fainting – now alert, Diabetic problems, Isolated limb fractures, Abdominal pain		
4	Less Urgent	Diarrhea, Vomiting, Non-traumatic back pain, Health care provisional admission		
Doctor Urgent	Urgent response	GP urgent admission to hospital. Urgent interhospital transfers		

Reclassify according to available data:

Reason for Call Out	No.	%
---------------------	-----	---

	Cardiac Arrest		
	Choking		
	Unconscious		
	Continuous seizure,		
	Not alert after fall or trauma, Allergic reaction with breathing problems, Major Incidents		
	Allergic reaction with breathing problems, Major Incidents		
	Major Incidents		

#### Questionnaire for Emergency Services and the Jordan Breast Cancer Program

1. Do you enter the exact numbered address into your Phone / GPS?

(Interpret the answer that best suits the category)

1	2	3	4	5
The maps do not recognize the numbers	We usually just go by description or map location	It does not make much difference to us	We try to get a location on What's App as well	Yes – this is much better than a location description

Comment:

2. Do you find the street numbering to be interpreted accurately by the maps?

(Interpret the answer that best suits the category)

1	2	3	4	5
The maps are useless	We usually just go by description or map location	We like the description as well	It is usually accurate	Yes – Pinpoint accurate – It is a big advantage

3. Do you think that street numbering makes it quicker to reach the destination?

(Interpret the answer that best suits the category)

1	2	3	4	5
We do not use the numbers	We usually just go by description or map location	It does not make much difference	It helps	Much quicker – It makes a big difference

4. Do you find that Street Numbering causes a reduction in fuel because you are routed more accurately?

(Interpret the answer that best suits the category)

1	2	3	4	5
It does not make a difference at all	We usually just go by description or map location	We do not notice any difference	It makes a difference	Yes – It saves us a lot

5. What is your recommendation to improve the implementation of the SNBN project?

#### Health Care Services- Jordan Breast Cancer Program

#### Use of Street Numbering in Ambulance Services

1. Do you use street numbering to find your destinations?

1	2	3	4	5
We do not really use street numbering	We usually just go by description or map location	It does not make much difference to us	We try to but it is not always practical	Always – We insist on the exact address

Comment:

17. Do you find that Street Numbering causes a reduction in response time because you are routed more accurately?

1	2	3	4	5
It does not make a difference at all	We usually just go by description or map location	We do not notice any difference	It makes a difference	Yes – It saves us a lot

Comment:

18. Do you find that Street Numbering causes a reduction in vehicle maintenance because you are routed more accurately?

1	2	3	4	5
It does not make a difference at all	We usually just go by description or map location	We do not notice any difference	It makes a difference	Yes – It saves us a lot

Comment:

19. Do you find that Street Numbering causes an increase in lives saved because you are routed more accurately?

1	2	3	4	5
---	---	---	---	---

It does not make a difference at all	We usually just go by description or map location	We do not notice any difference	It makes a difference	Yes – It saves us a lot
--------------------------------------	---------------------------------------------------	---------------------------------	-----------------------	-------------------------

Comment:

32. What other data do you collect? (For example):
33. Is there any difference(s)/difficulties/challenges between delivering your services in Amman, Irbid, Aqaba?
34. Any further Comment:

#### Jordan Post Company

11. What services require the provision of SNBN?
  1. Subscription for mailbox
  2. Sending and receiving parcels
  3. Transferring money
  4. Other
14. Is there any difference(s)/difficulties/challenges between delivering your services in Amman and out of Amman?

#### Jordan Royal Geographic Center

##### Awareness of SNBN

1. What is the role(s) of the JRGC in SNBN in Jordan?
2. Can you please describe the role(s) of the National Committee of Geographic Naming? Who are the members? What challenges does the committee face?
3. Can you please describe the process of the Romanization? Some people argue that it uses very scientific methods, and it is difficult to implement, what are your comments on that?
4. What are the cautions resulting from not involving the JRGC in the SNBN planning and implementation?
5. Were you involved in the SNBN project of CITIES? Yes/No
6. How satisfied are you with the implementation of this project?

Highly satisfied

Moderately satisfied

Slightly satisfied

Not at all

7. What are your recommendations to improve the implementation of the SNBN project in the coming phases?

#### Interviews with Delivery Services

1. Are you prevented from operating effectively because of the lack of street numbering? Yes/No
2. If street numbering were introduced to a new locality, where you do not currently operate, would you consider expanding your operation into this area?

1= street numbering makes no difference to us

2 = Street numbering makes little difference

3 = Do not know

4 = perhaps

5= Definitely

3. Is SNBN necessary for performing your jobs?

1= Strongly disagree

2 = Disagree

3 = Not sure / Do not know

4 = Agree

5= Strongly agree

4. To what extent the SNBN has improved the quality of delivering your services

1= not at all

2 = to a small extent

3 = to a moderate extent

4 = a great extent

5. Do you decline providing any service if SNBN does not exist? Yes/No

6. If YES, what are the services?

7. Is there any difference(s)/difficulties/challenges between delivering your services in Amman and out of Amman?

#### Delivery Time Data

8. Do you have data related to the average delivery time? Yes / No

9. If it is an SNBN area and data is available gain access to the statistics and calculate the reduction in delivery time from before SNBN was introduces

If data is not available:

10. By what percentage do you think that delivery time would decrease if systematic street numbering were available?

5%

10%

15%

20%

25%

30%

35%

40%

45%

50%

#### Fuel Consumption



22. Do you have data related to Fuel Consumption? Yes / No
23. What is your annual Fuel Consumption?                      Liters
24. What is your annual spend on fuel? JOD
25. If it is an SNBN area and data is available gain access to the statistics and calculate the improvement in fuel consumption due to the introduction of SNBN.

If data is not available:

26. By what percentage do you think that delivery time would decline if systematic street numbering were available?

5%

10%

15%

20%

25%

30%

35%

40%

45%

50%

#### Vehicle Maintenance

27. What is your annual cost of vehicle maintenance? \_\_\_\_\_

#### Use of Street Numbering in service delivery

28. Do you use street numbering to find your destinations?

(Interpret the answer that best suits the category)

1	2	3	4	5
We do not really use street numbering	We usually just go by description or map location	It does not make much difference to us	We try to but it is not always practical	Always – We insist on the exact address

Comment:

29. Do you enter the exact numbered address into your Phone / GPS?

(Interpret the answer that best suits the category)

1	2	3	4	5
The maps do not recognize the numbers	We usually just go by description or map location	It does not make much difference to us	We try to get a location on What's App as well	Yes – this is much better than a location description

Comment:

30. Do you find the street numbering to be interpreted accurately by the maps?

(Interpret the answer that best suits the category)

1	2	3	4	5
The maps are useless	We usually just go by description or map location	We like the description as well	It is usually accurate	Yes – Pinpoint accurate – It is a big advantage

31. Do you think that street numbering makes it quicker to reach the destination?

(Interpret the answer that best suits the category)

1	2	3	4	5
We do not use the numbers	We usually just go by description or map location	It does not make much difference	It helps	Much quicker – It makes a big difference

32. Do you find that Street Numbering causes a reduction in fuel because you are routed more accurately?

(Interpret the answer that best suits the category)

1	2	3	4
It does not make a difference at all	We do not notice any difference	It makes a difference	Yes – It saves us a lot

33. What is your recommendation to improve the implementation of the SNBN project?

Orange Jordan

Please Note: We do not want to ask for any information that is confidential or commercially sensitive, but answers to all the following questions will be useful to us. Please feel free to decline to answer any question that you feel is confidential. From our side, all information is confidential and only data will be processed to justify the case for expanding street naming and numbering in Jordan.

1. Areas of broadband covered in Jordan:

Specific Questions related to Orange Jordan

2. Number of broadband subscribers in Jordan:
3. What is your Annual Turnover for broadband services?
4. How many people are employed by Orange is providing broadband services?
5. What do you think is your % market share for this service?
6. What do you think is the market share of your competitors?

7. When a customer signs up for broadband services, do you require an exact street address with number on the application form or do you manage with location details only (e.g. GPS / Google maps)? / Location details only
8. Is it easier to meet your customer requirements if you have a street numbered address: Yes / No
9. Please explain:
10. Do you operate in locations where there is no Street numbering? Yes / No
11. If yes, is there any difference in the way you operate?
12. If No – Are you prevented from operating effectively because of the lack of street numbering?
13. Do you think that Systematic Street Naming and Numbering throughout Jordan will cause Orange to increase its number of subscribers?
14. Definitely / Probably / Do not know / Probably not / Definitely not
15. If you answer or probably, can you try to estimate (as best as you can, the percentage increase that it would give:

Maximum estimate: %

Minimum estimate: %

#### Support Costs

16. How much (approximately) are the annual costs of supporting and maintaining your broadband services (Installation, maintenance) etc.?
17. Do you think that systematic street naming and building numbering will help you to reduce your costs?

Definitely / Probably / Do not know / Probably not / Definitely not

18. If you answer definitely or probably, can you try to estimate (as best as you can, the percentage reduction that it would give:

Maximum estimate: %

Minimum estimate: %

## ROUND 2: SNBN SUPPLEMENTARY INTERVIEW GUIDES

### Jordan Electricity Company

(November 17, 2020)

**Hypothesis #1:** SNBN can enable a reduction in Technical losses by making more efficient the process of adjusting supply to demand through better mapping of substations.

- Is the local supply of electricity controlled physically/on-site at local substations? Or, is it controlled remotely from a central control room -- or even automatically through smart meters?
- If on-site and *all* substations are located within GAM (i.e., have SNBN), what impact has SNBN had on the way these assets are managed? Have average driver response times to these substations changed from 2007 (i.e., pre-SNBN) to now? Are these assets mapped differently now than they were in 2007 (i.e., pre-SNBN)?

- If on-site and *not all* substations are located within GAM (i.e., have SNBN), what is the impact of SNBN on the way these assets are managed? Are average driver response times to substations that are covered by SNBN significantly different than those to ones which are not? Are the assets covered by SNBN mapped differently than those which are not?
- If remotely, does SNBN play any role or contribute in any way to this process?
- If needed, how can we estimate the Technical loss savings enabled by SNBN? For example, what is the average number of substation visits per month? What is the difference in pre-SNBN and post-SNBN response times? What is the rate of loss prior to substation adjustment? What is the cost per unit of time?

**Hypothesis #2:** Commercial losses are primarily controlled through the proactive and reactive monitoring of individual customer electrical meters. SNBN can enable a reduction in Commercial losses by making it more efficient and effective to monitor electrical meters.

- Are individual electrical meters read physically/on-site at customer locations? Or, are they read remotely from a central control room -- or even automatically through smart meters?
- If on-site and *all* meters are located within GAM (i.e., have SNBN), what impact has SNBN had on the way these meters are read? Have average service times for reading meters in relation to commercial losses changed from 2007 (i.e., pre-SNBN) to now? Are these meters mapped differently now than they were in 2007 (i.e., pre-SNBN)?
- If on-site and *not all* meters are located within GAM (i.e., have SNBN), what is the impact of SNBN on the way these meters are managed? Are average service times to meters that are covered by SNBN significantly different than those to ones which are not? Are the meters covered by SNBN mapped differently than those which are not?
- Are there any other steps in Commercial loss prevention which are affected by SNBN (e.g., remediating illegal connections discovered during meter reading)?
- If needed, how can we estimate the Commercial loss savings enabled by SNBN? For example, what is the average number of meter reads per month? What is the difference in pre-SNBN and post-SNBN response time? What is the rate of loss prior to remediation? What is the cost per unit of time?
- Does this same impact of SNBN on proactive and reactive commercial loss management also apply to routine meter reading and customer billing?
- If remotely, does SNBN play any role or contribute in any way to this process?

#### General

- Are there any other ways in which SNBN has helped Jordan Electricity Company create value (e.g., save cost, generate additional revenue) since its introduction in Amman around 2007? Alternatively, are there any other ways in which the introduction of SNBN can help distributors outside Amman to create value?
- Approximately how long after the introduction of SNBN in Amman around 2007 did it take Jordan Electricity Company to take advantage of it -- by internalizing more precise street addresses into its systems, processes, and culture?
- Are there any other people within Jordan Electricity Company or at other organizations in the sector with whom we can/should discuss the potential benefits of SNBN?

Orange, Follow-up Interview

(November 17, 2020)

**Hypothesis #1:** Precise customer addresses significantly reduce the time spent on new account connection and existing account service calls.

- Are site visits to customer locations used for all or some new account connections and/or existing account service calls? Or, are some or all of these functions performed remotely? If there is an on-site component...
- Is the process, staffing, and average time spent inside GAM (with SNBN) and outside GAM (without SNBN) new account connections and/or existing account service calls the same or different? If different, what is the detailed description of the process for each type of call inside versus outside GAM? And, what is the average time spent per team member for each type of call? What is the outward travel time for each type of call?
- If different, to what extent can this difference be attributed to SNBN versus other factors?
- If needed, how can we estimate the new account connection and existing account service call savings enabled by SNBN? For example, what is the average number of new account connection and existing account service calls per month outside GAM? What is the cost (e.g., per month or hour) of the resources involved in the process outside GAM? What is the cost of gasoline (e.g., per month or year) outside GAM?

**Hypothesis #2:** Precise customer addresses will enable a 5-10% expansion of service.

- This estimate emerged from your first interview with Mike. Do you continue to feel that it is reasonable?
- If so, what are the drivers for the 5-10% service expansion (e.g., efficiency savings explored above are used to lower monthly rates and therefore stimulate greater demand, precise addresses will somehow enable the extension of service to areas that currently have no addresses)? Does this refer to 5-10% off of a total base or the base of customers in SNBN expansion areas (i.e., outside GAM)?
- Is it safe to assume that Orange's competitors will experience similar growth?
- If needed, how can we estimate the impact of this service expansion? For example, what is the current number of accounts -- either in total or outside GAM (depending on appropriate base for expansion -- see above)? (If relevant, what is the breakdown of those accounts by service type?) What is the average monthly charge per account (if relevant, for each service type)? (Will expansion accounts align with these average guidelines -- i.e., breakdown of accounts by service type, average monthly charge per service type? If not, how will they differ?) What is Orange's current market share? (Does this vary significantly inside versus outside GAM?)

#### General

- Are there any other ways in which SNBN helps Orange create value inside versus outside GAM? Alternatively, are there any other ways in which the introduction of SNBN outside Amman can help Orange to create value?
- Approximately how long after the introduction of SNBN in Amman around 2007 did it take Orange to take advantage of it -- by internalizing more precise street addresses into its systems, processes, and culture?
- Are there any other people within Orange or at other organizations in the sector with whom we can/should discuss the potential benefits of SNBN?

(November 19, 2020)

**Hypothesis #1:** SNBN can enable ISTD to ensure that the “tax roll” is complete and that all citizens who are eligible to pay income taxes are participating in the process.

- How do we determine who participates in our income tax process? How do we identify and register taxpayers?
- Do we believe that our current registry of taxpayers is complete and includes all eligible citizens?
  - If so, why are we so confident?
  - If not, why not? What are the current gaps in the system of identifying and registering taxpayers? Is there a way to estimate how large the gap is -- the number of taxpayers that *should* be registered versus the number of taxpayers that *actually are* registered?
- Could the availability of precise street addresses for every citizen through a nationwide SNBN project improve the way we identify and register taxpayers?
  - If yes, how? Is there a way that we estimate the potential impact of using precise street addresses to make our tax registry more complete? For example...
- How many additional taxpayers might be added to the registry?
- How much additional tax revenue might be raised from these additional taxpayers?
- How much might it cost initial to identify and register these taxpayers (i.e., initial investment or one-time cost)?
- How much might it cost to serve these additional taxpayers on an ongoing basis (i.e., operating margin for ISTD)?
  - If no, why not?
  - Is the process/system for registering taxpayers different in GAM (i.e., where precise street addresses are available through SNBN) and the North Amman Directorate (i.e., where they are not)?
    - If yes, how? What role does SNBN play in these differences?
    - Might it be possible to compare data from GAM and North Amman in order to estimate the potential impact of an SNBN project on North Amman? For example...
- Number of taxpayers per capita
- Income tax revenue raised per capita
- Operating costs/ISTD budget per taxpayer or per capita
  - The minimum required information tax department asks about to open a file for each eligible taxpayer?

**Hypothesis #2:** SNBN can enable ISTD to increase compliance with the income tax process by improving collections with citizens who owe taxes.

- What is the current system/process for paying income taxes?
- How do we collect from income taxpayers who owe taxes but don't pay?
- Could the availability of precise street addresses for every citizen through a nationwide SNBN project improve the way we collect from taxpayers in arrears?
  - If yes, how? Is there a way that we estimate the potential impact of using precise street addresses to support our collection process? For example...
    - What is the total amount of outstanding collections in an average year? How many non-paying taxpayers? How much money owed?



- How much of this can we currently address today? What is the current rate of collections? How big is the average gap each year?
- By how much might we be able to increase collections -- in terms of number of taxpayers who comply and amount of taxes paid?
- How much might it cost initially to incorporate SNBN into our collections system (i.e., initial investment or one-time cost)?
- How much more might it cost to utilize this improved system on an ongoing basis (i.e., operating margin for ISTD)?
- If no, why not?
- Is the process/system for collecting from taxpayers different in GAM (i.e., where precise street addresses are available through SNBN) and the North Amman Directorate (i.e., where they are not)?
- If yes, how? What role does SNBN play in these differences?
- Might it be possible to compare data from GAM and North Amman in order to estimate the potential impact of an SNBN project on North Amman? For example...
- Number of non-paying taxpayers per capita
- Amount of unpaid taxes per capita

#### Open / Exploratory Questions

- Are there other ways in which SNBN might improve our Sales Tax and/or Income Tax processes?

#### VTEL: Initial Interview

(November 19, 2020)

#### Introductions & Context

- Overview of our assessment and potential project
- Introduction to VTEL
- Company origin
- Current services, service locations, and number of customers/market share

**Hypothesis #1:** Precise customer addresses significantly reduce the time spent on new account connection and existing account service calls.

- Are site visits to customer locations used for all or some new account connections and/or existing account service calls?
- Is the process, staffing, and average time spent inside GAM (with SNBN) and outside GAM (without SNBN) new account connections and/or existing account service calls the same or different?
- If the same...
- What is the detailed description of the process for each type of call (i.e., new connection vs. service)?
- What is the average time spent for each team member on each step (including outward travel) for each type of call?
- In what ways could precise addresses improve this process?
- If different...

- What is the detailed description of the process for each type of call inside versus outside GAM?
- What is the average time spent for each team member on each step (including outward travel) for each type of call inside versus outside GAM?
- To what extent can this difference be attributed to SNBN versus other factors?
- If needed, how can we estimate the new account connection and existing account service call savings enabled by SNBN? For example...
- What is the average number of new account connection and existing account service calls per month?
- What is the cost (e.g., per month or hour) of the resources involved in the process?
- What is the cost of gasoline and vehicle maintenance (e.g., per month or year)?

**Hypothesis #2:** Precise customer addresses will enable an expansion of service through more effective penetration in existing service locations (i.e., connected buildings).

- What effort is currently made to sell further into existing service locations?
- Would precise street addresses enhance this effort?
- If so, how?
- What difference would this make? How significant an impact might this have?
- If needed, how can we estimate the impact of this service expansion? For example...
- What is the current number of accounts -- either in total or outside GAM (depending on appropriate base for expansion -- see above)?
- What is the average monthly charge per account?

#### General

- Are there any other ways in which SNBN helps VTEL create value inside versus outside GAM? Alternatively, are there any other ways in which the introduction of SNBN outside Amman can help VTEL to create value -- particularly in terms of service expansion?
- Are there sources of accepted third-party, industry-wide data which we could use to estimate impacts for the entire sector?
- Are there any other people within VTEL or at other organizations in the sector with whom we can/should discuss the potential benefits of SNBN?

Directorate of Legal Affairs

(November 22, 2020)

**Hypothesis #1:** SNBN can enable more effective collections of tax arrears.

- How significant is the challenge of unpaid taxes owed?
- How many cases each year?
- What is the approximate value to GoJ of all cases?
- What is the process for dealing with unpaid taxes?
- Does this process differ for GAM (which has precise addresses) and other areas (which don't)?
- How successful are these efforts? What share (%) of cases on average are resolved successfully? What share (%) of taxes owed on average are recovered each year?
- Do these success rates differ for GAM (which has precise addresses) and other areas (which don't)?

- Do we have any idea what these tax collection efforts cost GoJ? And, therefore what the net benefit (i.e., tax collected - additional budget spent = net benefit) for GoJ is?
- Could SNBN (and the GIS and tax registry databases it supports) enable improvements to our tax collection process?
  - If so, how specifically?
  - Would these improvements translate into a higher share of cases resolved and greater tax recovery? If so, by how much?
  - Would these improvements lower the cost of our tax collection efforts? If so, by how much?

#### CITIES Interview

(December 1, 2020)

#### Discussion Questions: Ongoing Cost

- Does the number of temporary jobs created look right -- relative to current pilot implementation and plans for expansion?
- Does the number of permanent jobs maintaining SNBN in GAM look right?
- Does the cost of maintaining SNBN in GAM look right? Does this include both labor and materials? (It seems very low only for the labor -- let alone materials and many other costs, such as transportation.)
- If not, how can we make good estimates? What are all the ongoing costs we need to consider (e.g., labor, sign replacement)?
- Are there additional fixed costs we should consider? Should we assume that GoJ will utilize/expand the GAM factory, or will need others
- Is the number of streets an appropriate way to scale (whatever) GAM resources for nationwide coverage? If not, is there a scaling approach which would be better (e.g., per capita, length of roads)? Or, should we just make a point estimate?

#### Discussion Questions: GIS

- What is the relationships between GoJ/USAID SNBN efforts, updates to maps maintained by Royal Jordanian Geographic Center (RJGC), and updates to GIS maps across various platforms (e.g., Google Maps)?
- How long does this mapping process typically take?
- How long does complete adoption (e.g., incorporation into processes, systems, and culture) take?
- Does our investment include all that will be needed for digital enablement?

## ANNEX III: SOURCES OF INFORMATION

### LIST OF PERSONS INTERVIEWED

	Organization	Job Position
1	Abdali Hospital	Consultant General and laparoscopic GI surgery
2	Ajloun Municipality	Financial Manager
3	Al Kara Municipality	Executive Manager
4	Al Salt Municipality	Mayor
5	Amman App	Operation Center Aman App
6	Aqaba Water Company	Customer Service Manager, PR & Water Awareness Manager
7	Aramex	Operations Leader
8	Arab Bank	Head of Real Estate & Construction Department
9	ASEZA	Head of SNBN Department
10	Bank Al Etihad	Senior Manager-Business Process Management
11	CITIES	Consultant
12	Civil Defense & Public Safety	Major in Civil Defense
13		Lieutenant in Operations & Control in Public Security
14		Director of Operations & Control Unit
15		Captain in Public Safety
16		Captain in Operations & Control Unit
17		Lieutenant in Operations & Control Unit
18		Sgt. In Operations & Control Unit
19	Civil Status & Passport Department	Director of Studies Department
20		Director of Administrative Development Department
21	Courier Services-DHL	Operations Duty Manager
22		Operating Director
23	Courier Services-Jeeny	Finance Manager
24	Courier Services-Delivery One	CEO

25	CVDB	Financial Expert
26	Department of Statistics	Customer Service Officer
27		Manager of Methodologies and Research Department
28	Electricity Distribution Co. EDCO	Director General Deputy
29	EnConsult	Managing Consultant (former Economic Adviser to Prime Minister)
30	EU Support to Social Protection System in Jordan	Team Leader
31	GAM	Deputy City Manager for Financial Affairs
32		Head of SNBN Department
33		Head of GIS Department
34		Deputy of Urban Planning Department
35	GAM-Maintenance & Construction Departments	Road Maintenance Manager
36		Engineer
37		Engineer
38	GiZ Aid for Trade	Team Leader
39	Greater Amman Municipality	Head of SNBN Department
40	Greater Irbid Municipality	Director of Zooning Department
41		Mayor's Assistant for Planning Affairs
42		Mayor's Assistant
43	Income & Sales Tax Department	Head of Planning Department
44		Assistant Director-General for Planning, Development and Taxpayers Services
45		Directorate of Information Technology
46		Head of North Amman Directorate
47		Head of Legal Affairs Directorate
48	Irbid Electricity Company	Assistant General Manager for Technical Affairs
49	Jordan Breast Cancer Program	Director
50	Jordan Electric Power Company	General Manager

51	Jordan Hospital	Head of PR Department
52		Ambulance Driver
53	Jordan Paramedic Society	President
54	Jordan Post	Irbid Directorate Manager
55	Land & Survey Department	Minister Consultant for Local and International Affairs
56	Ministry of Digital Economy & Entrepreneurship	Policy Researcher
57		Head of Economics and Studies Unit
58	Ministry of Health	Director of Crises Management
59	Ministry of Local Affairs	Secretary General
60		Solid Waste Department Deputy Director
61		Acting Secretary General
62		Minister Consultant
63		Head of Planning Department
64		Head of SNBN Department
65	Miyahuna	Head of Operations
66		Director of Technical Services Department
67		Head of Business Development Department
68		Unified Complaints Center
69		Director of Unified Complaints
70		Deputy General Manager
71		Head of Maintenance Department (South Amman)
72		Chief Executive Officer
73	Ministry of Planning & International Cooperation	Head of Governorate Development Sector
74	Ministry of Tourism	Minister Consultant
75	Ministry of Water & Irrigation	Utility Management Specialist
76	Municipality of Al Mearad/Jerash	Head of Zooning Department

77	Municipality of Al Nasiem/Jerash	Eng. Of Zooning & Technical Support
78	Municipality of Al Saro/Irbid	Head of Construction Department
79	Municipality of Bab Amman/Jerash	Eng. Survey and Zooning
80	Municipality of Greater Irbid	Mayor
81		Head of Planning Department
82		Head of Survey Department
83		Head of Zooning Department
84		Head of SNBN Department
85	Municipality of Greater Irbid/Hashimih	Head of Local Council
86	Municipality of Greater Irbid/Huson	Head of Local Council
87	Municipality of Greater Irbid/Nouzha	Head of Local Council
88	Municipality of Greater Irbid/Huwara	Head of Local Council
89	Municipality of Greater Jerash	Mayor
90		Executive Director
91		Head of SNBN
92	Municipality of Muath Bin Jabal/Irbid	Head of Computing & Information Department
93	Municipality of Shu-la/Irbid	Head of Procurement Department
94	National Fund Aid	Head of Transportation Division
95	Orange Jordan	Manager-Innovation Space
96		Orange Geo Marketing Team
97	Public Security Department	Operations Department
98		Operations Department
99		Operations Department
100	Royal Jordanian Geographical Center	Head of Project Study Department
101		Engineer at Projects Department
102		Technical Advisor



103		Head of Supervision & Follow-Up Department/Planning Directorate
104		Head of Production Department
105		General Coordinator of the National Geographical Names Committee
106	Sanabel	Engineer in GIS Department
107		Specialist Engineer in GIS Department
108	Talabat	Sr. Manager Country Logistics
109	USAID	Office of Democracy, Rights, and Governance
110		Contractor Operations Representative
111	VTEL	Sales Manager
112	Water Authority of Jordan	Operation & Maintenance Engineer-Head of Department
113	Yarmouk Water Company	General Director
114		Director of Customer Service Directorate

## BIBLIOGRAPHY OF DOCUMENTS REVIEWED

- Al-Assa'd, T. and Sauer, J., 2010. *The Performance Of Water Utilities In Jordan*. Water, Science and Technology, Volume 62, Issue 4. [online] IWA Publishing, pp.803–808. Available at: <<https://iwaponline.com/wst/article-abstract/62/4/803/16516/The-performance-of-water-utilities-in-Jordan?redirectedFrom=PDF>> [Accessed 7 January 2021].
- Bartik, T., 2011. *Including Jobs In Benefit-Cost Analysis*. Annual Review of Resource Economics Vol. 4. [online] Kalamazoo, Michigan: Upjohn Institute for Employment Research, pp.55-73. Available at: <<https://www.annualreviews.org/doi/abs/10.1146/annurev-resource-110811-114520>> [Accessed 7 January 2021].
- Bosworth, R. C., Hunter, A., & Kibria, A. 2017. *The Value of a Statistical Life: Economics and Politics*. STRATA. Available at: <https://www.strata.org/vsl/>
- Bürger, A., Wnent, J., Bohn, A., Jantzen, T., Brenner, S., Lefering, R., Seewald, S., Gräsner, J. T., & Fischer, M. 2018. *The Effect of Ambulance Response Time on Survival Following Out-of-Hospital Cardiac Arrest*. Deutsches Arzteblatt international, 115(33-34), 541–548. Available at: <https://doi.org/10.3238/arztebl.2018.0541>
- Carlson, C., n.d. *Arcgis: A Fast Track To Building Smart Communities*. [online] Proceedings.esri.com. Available at: <[https://proceedings.esri.com/library/userconf/ciosummit17/papers/ps\\_cio\\_18.pdf](https://proceedings.esri.com/library/userconf/ciosummit17/papers/ps_cio_18.pdf)> [Accessed 7 January 2021].
- Chase, D., Roderick, P., Cooper, K., Davies, R., Quinn, T., & Raftery, J. 2006. Using simulation to estimate the cost effectiveness of improving ambulance and thrombolysis response times after myocardial infarction. Emergency medicine journal: EMJ, 23(1), 67–72. Available at: <https://doi.org/10.1136/emj.2004.023036>
- ConsultingWhere Ltd, & Coote, A. 2016. GeoPlace-Cost Benefit Analysis of Address and Street Data for Local Authorities and Emergency Services in England and Wales Final Report. ConsultingWhere Ltd.
- Data2.unhcr.org. 2014. *The Quest For Decentralizing Government In The Hashemite Kingdom Of Jordan: Some Preliminary Findings Of A Situation Analysis*. [online] Available at: <<https://data2.unhcr.org/en/documents/download/39416>> [Accessed 7 January 2021].
- Department for Communities and Local Government. 2009. *Multi-criteria analysis: A manual*. Communities and Local Government Publications, pp.17-18. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/191506/Multi-crisis\\_analysis\\_a\\_manual.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/191506/Multi-crisis_analysis_a_manual.pdf)
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Central Bank of Jordan (CBJ), 2017. *Financial Inclusion Diagnostic Study In Jordan 2017, Synthesis Report*. Amman, Jordan: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and Central Bank of Jordan (CBJ), pp.1-119.
- De Rosbo, S. 2020. *Jordan - Telecoms, Mobile and Broadband - Statistics and Analyses*. budde.com.au. Available at: <https://www.budde.com.au/Research/Jordan-Telecoms-Mobile-and-Broadband-Statistics-and-Analyses>
- Dixit, A. and McGray, H., 2013. *ANALYZING CLIMATE CHANGE ADAPTATION OPTIONS USING MULTI-CRITERIA ANALYSIS*. [online] USAID, pp.1-20. Available at: <<https://www.climatelinks.org/resources/analyzing-climate-change-adaptation-options-using-multi-criteria-analysis>> [Accessed 7 January 2021].

Farvacque-Vitkovic, C., Godin, L., Leroux, H., Verdet, F., & Chavez, R. 2005. *Street Addressing and the Management of Cities* (No. 32923). World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/7342>

General Budget Department, The Hashemite Kingdom of Jordan. (2020). *General Budget Law 2020*. Available at: <http://Gbd.Gov.Jo/En/Releases/Law-Min>. <http://gbd.gov.jo/en/releases/law-min>

Global Future Council on Cities and Urbanization, 2017. *Data Driven Cities- 20 Stories Of Innovation*. [online] World Economic Forum, pp.1-28. Available at: [http://www3.weforum.org/docs/Top20\\_Global\\_Data\\_Stories\\_report\\_2017.pdf](http://www3.weforum.org/docs/Top20_Global_Data_Stories_report_2017.pdf) [Accessed 7 January 2021].

Harberger, A., 2008. *Introduction To Cost Benefit Analysis -Part II- Labor Market Issues*. Ph.D. University of California, Los Angeles.

IMF. 2020. Jordan: 2020 Article IV Consultation And Request For An Extended Arrangement Under The Extended Fund Facility-Press Releases; Staff Report; And Statement By The Alternate Executive Director For Jordan. [online] Available at: <https://www.imf.org/en/Publications/CR/Issues/2020/04/10/Jordan-2020-Article-IV-Consultation-and-Request-for-an-Extended-Arrangement-under-the-49324> [Accessed 7 January 2021].

Jaldell, H., Lebnak, P., & Amornpetchsathaporn, A. 2014. Time Is Money, But How Much? The Monetary Value of Response Time for Thai Ambulance Emergency Services. *Value in Health*, 17(5), 555–560. Available at: <https://doi.org/10.1016/j.jval.2014.05.006>

Jordan Civil Defense Directorate. 2015. *Civil Defense Annual Report 2015*. Available at: <http://www.cdd.gov.jo/annual.aspx?id=2#/2>

Jordan Civil Defense Directorate. 2016. *Civil Defense Annual Report 2016*. Available at: <http://www.cdd.gov.jo/annual.aspx?id=2#/2>

Jordan Monitoring, Evaluation and Learning Activity. (2020). Nationwide Street Naming and Building Numbering (SNBN) and Local Economic Development- Evaluation and Assessment. USAID.

Jordan Ministry of Planning and International Cooperation, 2015. *Jordan 2025, A National Vision And Strategy*. Ministry of Planning and International Cooperation.

Jordan Ministry of Water & Irrigation. 2016. *National Water Strategy 2016-2025*. Available at: <http://inform.gov.jo/LinkClick.aspx?fileticket=7CgZmlz6FQQ%3D&portalid=0&language=en-US>

Jordan Ministry of Water & Irrigation. 2009. *Water For Life, National Water Strategy 2008-2022*. Available at: <http://extwprlegs1.fao.org/docs/pdf/jor153874.pdf>

Lind, M. & Ministry for Housing, Urban, and Rural Affairs. 2014. *Addresses and Address Data - Experiences from Denmark* [Slides]. SlideShare. Available at: <https://www.slideshare.net/Mortlin/addresses-and-address-data-experiences-from-denmark>

Lindhjem, H., Navrud, S. and Braathen, N., 2010. *Valuing Lives Saved From Environmental, Transport And Health Policies: A Meta-Analysis Of Stated Preference Studies*. Working Party on National Environmental Policies. [online] OECD, pp.1-60. Available at: [http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=env/e-poc/wpnep\(2008\)10/final](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?doclanguage=en&cote=env/e-poc/wpnep(2008)10/final) [Accessed 7 January 2021].

Max, W., Rice, D. and Sung, H., 2004. *Valuing Human Life: Estimating The Present Value Of Lifetime Earnings, 2000*. Ph.D. University of California, San Francisco.

Ministry of Municipal Affairs & Cities & Villages Development Bank (CVDB). 2014. Development of a National Strategy to Improve the Municipal Solid Waste Management Sector in the Hashemite Kingdom of Jordan, Baseline Study on the Existing MSWM System in the Hashemite Kingdom of

- Jordan (1st Draft Report). Regional and Local Development Project (RLDP). Available at: [http://www.mma.gov.jo/Files/Docs/11102018\\_043930BaselineReport.pdf](http://www.mma.gov.jo/Files/Docs/11102018_043930BaselineReport.pdf)
- Ministry of Water and Irrigation. (2015). *Jordan Water Sector Facts and Figures 2013*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Available at: <https://jordankmportal.com/resources/jordan-water-sector-facts-and-figures-1>
- Morbato, J., 1965. PHYSICAL AND SOCIAL IMPLICATIONS OF STREET NAMING AND HOUSE NUMBERING SYSTEMS IN TODAY'S URBAN ENVIRONMENT. Master's Degree. Michigan State University.
- Noland, R. B., & Quddus, M. A. 2004. Improvements in medical care and technology and reductions in traffic-related fatalities in Great Britain. *Accident Analysis & Prevention*, 36(1), 103–113. Available at: [https://doi.org/10.1016/s0001-4575\(02\)00132-x](https://doi.org/10.1016/s0001-4575(02)00132-x)
- Pell, J. P. 2001. Effect of reducing ambulance response times on deaths from out of hospital cardiac arrest: cohort study. *BMJ*, 322(7299), 1385–1388. Available at: <https://doi.org/10.1136/bmj.322.7299.1385>
- Public Security Directorate. n.d. *The statistics of traffic accidents*. Jordan Public Security Directorate, Traffic Department. Retrieved January 7, 2021. Available at: <https://www.psd.gov.jo/index.php/en/statistics-1>
- RapidSOS. 2015. *Quantifying the Impact of Emergency Response Times*. Available at: [https://cdn2.hubspot.net/hubfs/549701/Documents/RapidSOS\\_Outcomes\\_White\\_Paper\\_-\\_2015\\_4.pdf](https://cdn2.hubspot.net/hubfs/549701/Documents/RapidSOS_Outcomes_White_Paper_-_2015_4.pdf)
- Reznick, A. 2016. *Taxis, Uber and Amman's transportation conundrum*. Middle East Eye. Available at: <https://www.middleeasteye.net/features/taxis-uber-and-ammans-transportation-conundrum>
- Ricardo-AEA. 2014. *Update of the Handbook on External Costs of Transport-Final Report* (Issue Number 1). European Commission. Available at: [https://ec.europa.eu/transport/sites/transport/files/handbook\\_on\\_external\\_costs\\_of\\_transport\\_2014\\_0.pdf](https://ec.europa.eu/transport/sites/transport/files/handbook_on_external_costs_of_transport_2014_0.pdf)
- Rotondo, M. F., Bard, M. R., Sagraves, S. G., Toschlog, E. A., Schenarts, P. J., Goettler, C. E., Newell, M. A., & Robertson, M. J. 2009. What Price Commitment: What Benefit? The Cost of a Saved Life in a Developing Level I Trauma Center. *The Journal of Trauma: Injury, Infection, and Critical Care*, 67(5), 915–923. Available at: <https://doi.org/10.1097/ta.0b013e3181b848e7>
- Sánchez-Mangas, R., García-Ferrer, A., de Juan, A., & Arroyo, A. M. 2010. The probability of death in road traffic accidents. How important is a quick medical response? *Accident Analysis & Prevention*, 42(4), 1048–1056. Available at: <https://doi.org/10.1016/j.aap.2009.12.012>
- SimpleSense Inc. 2019. *Quantifying the High Cost of Delayed Emergency Response at the Workplace*. <https://simplesense.io/2019/06/14/quantifying-the-high-cost-of-delayed-emergency-response-at-the-workplace/>
- Smith, T. B. 2004. Electricity theft: a comparative analysis. *Energy Policy*, 32(18), 2067–2076. Available at: [https://doi.org/10.1016/s0301-4215\(03\)00182-4](https://doi.org/10.1016/s0301-4215(03)00182-4)
- Snyder, R., Siegman, P., Huff, H., & McCormick, C. 2013. *Best Practices Emergency Access in Healthy Streets*. Los Angeles County Department of Public Health. Available at: <https://nacto.org/wp-content/uploads/2015/04/Best-Practices-Emergency-Access-in-Healthy-Streets.pdf>
- Statistics and Indicators of The Postal Market - Telecommunications Regulatory Commission*. n.d. Telecommunications Regulatory Commission. Retrieved January 7, 2021. Available at: <https://trc.gov.jo/Pages/viewpage?pageID=131>

UNDP. 2020. *Impact Of COVID-19 On Households In Jordan | UNDP In Jordan*. [online] Available at: <<https://www.jo.undp.org/content/jordan/en/home/library/impact-of-covid-19-on-households-general.html>> [Accessed 7 January 2021].

Viscusi, W. K., & Masterman, C. J. 2017. Income Elasticities and Global Values of a Statistical Life. *Journal of Benefit-Cost Analysis*, 8(2), 226–250. Available at: <https://doi.org/10.1017/bca.2017.12>

Weldali, M. 2019. *Overtaken by ride-hailing apps, yellow taxi drivers lament*. Jordan Times. Available at: <https://jordantimes.com/news/local/overtaken-ride-hailing-apps-yellow-taxi-drivers-lament>

Wilde, Elizabeth. 2008. *Do Response Times Matter? The Impact of EMS Response Times on Health Outcomes*. Available at: [https://www.researchgate.net/publication/23544118\\_Do\\_Response\\_Times\\_Matter\\_The\\_Impact\\_of\\_EMS\\_Response\\_Times\\_on\\_Health\\_Outcomes](https://www.researchgate.net/publication/23544118_Do_Response_Times_Matter_The_Impact_of_EMS_Response_Times_on_Health_Outcomes)

Working Group on Losses Reduction, 2017. *Reduction Of Technical And Non-Technical Losses In Distribution Networks*. [online] International Conference on Electricity Distribution (CIRED), pp.1-114. Available at: <<http://www.cired.net/cired-working-groups/technical-and-non-technical-losses>> [Accessed 7 January 2021].

## ANNEX IV: DISCLOSURE OF ANY CONFLICTS OF INTEREST

CONSULTANT: BASHEER AL ZOUBI

Evaluation team members are required to sign the below statement attesting to a lack of conflict of interest or describing an existing or potential conflict of interest relative to the program being evaluated that could lead reasonable third parties to conclude that the evaluator or evaluation team member is not able to maintain independence and, thus is not capable of exercising objective and impartial judgement on all issues associated with conducting and reporting the work.

Real or potential conflicts of interest may include, but are not limited to the following:

18. Immediate family or close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.
2. Financial interest that is direct, or is significant/material though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.
3. Current or previous direct or significant/material though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.
4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.
5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.
6. Preconceived ideas towards individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.

☒ I have no conflict of interest to report.

☐ I have the following potential conflict of interest to report.

---

I hereby certify (1) that the information set forth above is true and complete to the best of my knowledge and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished, as stated in my non-disclosure agreement.

Name: Basheer Al Zoubi

Signature: 

Date: Dec 16 2020

## LOCAL RESEARCHER: OROUBA AL SABBAGH

Evaluation team members are required to sign the below statement attesting to a lack of conflict of interest or describing an existing or potential conflict of interest relative to the program being evaluated that could lead reasonable third parties to conclude that the evaluator or evaluation team member is not able to maintain independence and, thus is not capable of exercising objective and impartial judgement on all issues associated with conducting and reporting the work.

Real or potential conflicts of interest may include, but are not limited to the following:

1. Immediate family or close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.
2. Financial interest that is direct, or is significant/material though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.
3. Current or previous direct or significant/material though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.
4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.
5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.
6. Preconceived ideas towards individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.

☐ I have no conflict of interest to report.

☐ I have the following potential conflict of interest to report.

---

I hereby certify (1) that the information set forth above is true and complete to the best of my knowledge and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished, as stated in my non-disclosure agreement.

Name: Orouba Al Sabbagh

Signature: Orouba Sabbagh

Date: 16/12/2020



**Article 5. Conflict of Interest and Standards of Business Conduct.**

- a) **Disclosure.** Prior to commencing any assignment under this Agreement, the Contractor shall disclose to Dexis the existence of and details pertaining to any other employment or consulting activity in which the Contractor is engaged that could potentially result in a conflict of interest, as specifically defined in FAR Parts 3 and 9, or which could otherwise interfere with the Services to be provided under this Agreement. Dexis may require the Contractor to complete a separate conflict of interest certification. If a potential or actual conflict of interest becomes known to Contractor after the effective date of this Agreement, Contractor will provide written notice of the matter to Dexis immediately when the conflict of interest first becomes known to Contractor.
- b) **Conflicts of Interest.** During the Period of Performance of the Agreement, Contractor shall not engage in any other employment or work which in any way interferes with the Contractor's performance of the Services hereunder, or which is offered to or procured by the Contractor, directly or indirectly, as a result of the Contractor's performance of the Services under this Agreement. Contractor shall not engage in any employment or activities that may create an actual or potential conflict of interest as specifically defined in FAR Parts 3 and 9 in connection with the Services provided to Dexis under this Agreement.
- c) **Gifts.** The Contractor shall not accept any gifts, gratuities, free trips, personal property, or any other items or services of whatever nature from any person or organization as an inducement to perform or provide any services of whatever nature on behalf of Dexis, or for any personal gain as a result of the Contractor's work for Dexis under this Agreement.
- d) **Standards of Business Conduct.** The Contractor shall maintain a Code of Business Ethics and Conduct that is compliant with FAR 52.203-13 (as supported by external evidence provided to Dexis) or elect to strictly abide by Dexis' Code of Ethics, a copy of which is available upon request.

**Article 6. Relationship of the Parties.** The Parties to this Agreement are independent contractors and are not agents or employees of each other or engaged in a joint venture and/or partnership or any other form of entity. Neither Party is authorized or empowered to act on behalf of or bind the other with respect to any contract, warranty, or representation as to any matter.

**Article 7. Risk, Indemnification, and Force Majeure.**

- a) **Risk.** The Contractor is fully informed of the existing political situation and living conditions in any and all locations in which the Contractor will be performing the Services and understands and assumes all risks to life, limb, and health, including but not limited to physical and mental health associated with travel to and from, residence in, and the performance of the Services in such locations. The Contractor understands that Dexis has put in place safety and security risk management policies, measures, and procedures, and acknowledges that it is his or her own responsibility to comply with these policies, which are available to the Contractor upon request. The Contractor understands that he or she has the right to decline or withdraw from any deployment that poses an unacceptable risk to him or her.
- b) **Indemnification.** The Contractor shall indemnify and hold harmless Dexis and be solely responsible for the payment of all claims, losses, damages, liabilities, and expenses for the loss of property or for personal injury, death, or otherwise, arising out of any act or omission of the Contractor, the Contractor's agents, or the Contractor's representatives in connection with the Contractor's performance under this Agreement. Dexis will not indemnify or hold harmless the Contractor from or against any loss, liability or claim whatsoever arising in any way, at any time from, under, or in relation to this Agreement.
- c) **Force Majeure.** Any failure on the part of either Party to satisfactorily perform any obligation under this Agreement shall not be deemed a breach of this Agreement if the same shall arise from any cause or acts

contradiction, or ambiguity has not otherwise been waived by the aggrieved Party, the following order of precedence shall govern:

- i. Agreement text
  - ii. Attachment C – Provisions Required by Client
  - iii. Attachment B – Mandatory Disclosures and Certifications
  - iv. Attachment A – Statement of Work
- j) **Fraud Reporting.** Dexis has zero tolerance for fraud. Fraud is any act or omission that intentionally misleads, or attempts to mislead, to obtain a benefit or to avoid an obligation. If Contractor has concerns about potential fraud in any way related to Dexis projects, contracts or activities, Contractor should contact the Dexis Contractual Representative.
- k) **Survival.** Notwithstanding the expiration or termination of this Agreement, the obligations set forth in Articles 3(c), 3(e), 3(f), 4, 7(b), 9, 10, 11(b), 13(b), 15(a), 15(c), 15(d), 15(e), 15(g), 15(h) and 15(i) shall survive and continue.

IN WITNESS WHEREOF, the Parties have executed this Agreement effective as of the date first written above. By signing below, the Contractor acknowledges receipt of this Agreement and all attachments and certifies to the statements included in Attachment B – Mandatory Disclosures and Certifications.

Dexis Consulting Group:



Name: Leigh Hartless  
Title: Contracts and Grants Administration  
Manager  
Date: Jul 31, 2020

Contractor:

  
Orouba Sabbagh (Aug 1, 2020) (00174)

Name: Orouba Sabbagh  
Date: Aug 1, 2020



THE KAIZEN COMPANY

www.thekaizencompany.com

1775 Pennsylvania Avenue NW,  
Suite 1100  
Washington, DC 20006, USA  
Tel: +1 (202) 299-9801

Street Naming & Building Numbering (SNBN) Assessment, Researcher/ POC – (Rasha Al-Akkad)

#### Conflict of Interest Disclosure Form

Evaluation team members are required to sign the below statement attesting to a lack of conflict of interest or describing an existing or potential conflict of interest relative to the program being evaluated that could lead reasonable third parties to conclude that the evaluator or evaluation team member is not able to maintain independence and, thus is not capable of exercising objective and impartial judgement on all issues associated with conducting and reporting the work.

Real or potential conflicts of interest may include, but are not limited to the following:

1. Immediate family or close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.
2. Financial interest that is direct, or is significant/material though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.
3. Current or previous direct or significant/material though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.
4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.
5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.
6. Preconceived ideas towards individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.

☒ I have no conflict of interest to report

☐ I have the following potential conflict of interest to report

I hereby certify (1) that the information set forth above is true and complete to the best of my knowledge and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information from unauthorized use or disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished, as stated in my non-disclosure agreement.

Name: Rasha Al-Akkad

Signature:

Date: December 16, 2020

DocuSigned by:

Rasha Al-Akkad

A0867802933F472...

## LOCAL RESEARCHER: SAMEH ASIM AJLOUNI

Evaluation team members are required to sign the below statement attesting to a lack of conflict of interest or describing an existing or potential conflict of interest relative to the program being evaluated that could lead reasonable third parties to conclude that the evaluator or evaluation team member is not able to maintain independence and, thus is not capable of exercising objective and impartial judgement on all issues associated with conducting and reporting the work.

Real or potential conflicts of interest may include, but are not limited to the following:

7. Immediate family or close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.
8. Financial interest that is direct, or is significant/material though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.
9. Current or previous direct or significant/material though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.
10. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.
11. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.
12. Preconceived ideas towards individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.

☒ I have no conflict of interest to report.

☐ I have the following potential conflict of interest to report.

---

I hereby certify (1) that the information set forth above is true and complete to the best of my knowledge and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished, as stated in my non-disclosure agreement.

Name: Sameh Asim Ajlouni

Signature:



Date: 12/19/2020



THE KAIZEN COMPANY

www.thekaizencompany.com

1775 Pennsylvania Avenue NW,  
Suite 1100  
Washington, DC 20006, USA  
Tel: +1 (202) 299-9801

**Street Naming & Building Numbering (SNBN) Assessment, Team Lead – Brad Fusco**

**Conflict of Interest Disclosure Form**

Evaluation team members are required to sign the below statement attesting to a lack of conflict of interest or describing an existing or potential conflict of interest relative to the program being evaluated that could lead reasonable third parties to conclude that the evaluator or evaluation team member is not able to maintain independence and, thus is not capable of exercising objective and impartial judgement on all issues associated with conducting and reporting the work.

Real or potential conflicts of interest may include, but are not limited to the following:

1. Immediate family or close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.
2. Financial interest that is direct, or is significant/material though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.
3. Current or previous direct or significant/material though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.
4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.
5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.
6. Preconceived ideas towards individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.

☒ I have no conflict of interest to report.

☐ I have the following potential conflict of interest to report.

---

I hereby certify (1) that the information set forth above is true and complete to the best of my knowledge and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished, as stated in my non-disclosure agreement.

**Name:** Bradley David Fusco

**Signature:**

**Date:** 16 December 2020



TEAM LEAD: MICHAEL MANN



THE KAIZEN COMPANY

www.thekaizencompany.com

1775 Pennsylvania Avenue NW,  
Suite 1100  
Washington, DC 20006, USA  
Tel: +1 (202) 299-9801

SNBN/LED Assessment Team Leader – Michael Mann

#### Conflict of Interest Disclosure Form

Evaluation team members are required to sign the below statement attesting to a lack of conflict of interest or describing an existing or potential conflict of interest relative to the program being evaluated that could lead reasonable third parties to conclude that the evaluator or evaluation team member is not able to maintain independence and, thus is not capable of exercising objective and impartial judgement on all issues associated with conducting and reporting the work.

Real or potential conflicts of interest may include, but are not limited to the following:

1. Immediate family or close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.
2. Financial interest that is direct, or is significant/material though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.
3. Current or previous direct or significant/material though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.
4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.
5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.
6. Preconceived ideas towards individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.



I have no conflict of interest to report.



I have the following potential conflict of interest to report.

---

I hereby certify (1) that the information set forth above is true and complete to the best of my knowledge and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished, as stated in my non-disclosure agreement.

Name: Michael Mann

Signature: 

Date: Jan 6, 2021



THE KAIZEN COMPANY

www.thekaizencompany.com

1775 Pennsylvania Avenue NW,  
Suite 1100  
Washington, DC 20006, USA  
Tel: +1 (202) 299-9801

SNBN/LED Assessment and Public/Municipal Finance Subject Matter Expert – Louis Picard

#### Conflict of Interest Disclosure Form

Evaluation team members are required to sign the below statement attesting to a lack of conflict of interest or describing an existing or potential conflict of interest relative to the program being evaluated that could lead reasonable third parties to conclude that the evaluator or evaluation team member is not able to maintain independence and, thus is not capable of exercising objective and impartial judgement on all issues associated with conducting and reporting the work.

Real or potential conflicts of interest may include, but are not limited to the following:

1. Immediate family or close family member who is an employee of the USAID operating unit managing the project(s) being evaluated or the implementing organization(s) whose project(s) are being evaluated.
2. Financial interest that is direct, or is significant/material though indirect, in the implementing organization(s) whose projects are being evaluated or in the outcome of the evaluation.
3. Current or previous direct or significant/material though indirect experience with the project(s) being evaluated, including involvement in the project design or previous iterations of the project.
4. Current or previous work experience or seeking employment with the USAID operating unit managing the evaluation or the implementing organization(s) whose project(s) are being evaluated.
5. Current or previous work experience with an organization that may be seen as an industry competitor with the implementing organization(s) whose project(s) are being evaluated.
6. Preconceived ideas towards individuals, groups, organizations, or objectives of the particular projects and organizations being evaluated that could bias the evaluation.



I have no conflict of interest to report.



I have the following potential conflict of interest to report.

---

I hereby certify (1) that the information set forth above is true and complete to the best of my knowledge and (2) that I will update this disclosure form promptly if relevant circumstances change. If I gain access to proprietary information of other companies, then I agree to protect their information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information from unauthorized use of disclosure for as long as it remains proprietary and refrain from using the information for any purpose other than that for which it was furnished, as stated in my non-disclosure agreement.

Name: Louis Picard

Signature: 

Date: Jan 5, 2021

## ANNEX V: SUMMARY INFORMATION ABOUT ASSESSMENT TEAM MEMBERS

### MICHAEL MANN: TEAM LEAD

#### PROFESSIONAL PROFILE

---

Mr. Michael Mann is an independent economic development consultant and incorporated financial accountant with over 30 years of experience supporting the design, implementation, and managing resources for international programs. Mr. Mann is particularly experienced with project cycle management and monitoring and evaluation and has worked on projects primarily centered around economic development, financial management, business strategy, and investment promotion. Mr. Mann has served as a Team Leader on over 20 independent consulting assignment, and as a subject matter expert on at least 20 other projects, with at least five previous assignment in Jordan. In these roles, he has engaged with a variety of stakeholders across different levels, including SMEs, national authorities and ministries, international donors, and multilateral institutions (including the European Investment Bank). In addition to extensive field experience across the Middle East, Africa, Asia, and Europe, Mr. Mann holds an LLM in International Commercial Law and an MBA in Management.

#### EDUCATION

---

LLM, International Commercial Law, University of Salford, United Kingdom, 2017  
MBA, Management, Maastricht University School of Business (EuroMBA Consortium), The Netherlands, 2011  
FFA, Financial Accounting, Caledonian University, United Kingdom, 1983

#### PROFESSIONAL EXPERIENCE

August 2019 to Present	Team Leader, GOPA Mbh., Jordan Serves as Team Leader and provides technical assistance on the Innovate Jordan Program – European Union (EU) funded – which seeks to position the private sector as the main driver of inclusive economic development.
June 2019 to February 2020	Team Leader, GOPA Mbh., Egypt Served as Team Leader for an Industrial Zone Strategy and Action Plan provided to the Industrial Development Authority (IDA).
May 2019 to June 2019	Lead Expert, Transtec, Belgium Served as Team Leader for an End-Term Review the Business Incubator Support Services (BSIS) project, which seeks to promote the growth of Small and Medium Enterprises (SMEs) and enhance the skills of entrepreneurs in the West Bank and Gaza.



August 2018 to March 2019	<p>Team Leader, BDO, Jordan</p> <p>Led and oversaw the European Investment Bank (EIB) Funded Jordan SME Growth Program (ACCELERATE with JEDCO), which supported increased access to finance, development of tools for SME growth, and business planning for SMEs in a wide variety of sectors.</p>
July 2018 to August 2018	<p>Non-Key Expert, BDO, Jordan</p> <p>Served as the Non-Key Expert for the EIB Funded Jordan SME Growth Program (ACCELERATE with JEDCO), which supported increased access to finance, development of tools for SME growth, and business planning for SMEs in a wide variety of sectors.</p>
July 2016 to September 2016	<p>Financial Consultant, EGIS International, Belgium</p> <p>Provided financial expertise for the French Agency for Development on the Palestine Cluster Project.</p> <p>Conducted investment appraisal and financial forecasting for potential investment of the Salfit Furniture Cluster, Palestine, in a new assembly and distribution center in Belgium.</p>
November 2015 to January 2016	<p>Team Leader and Economist, Sofreco, Ethiopia</p> <p>Oversaw business valuation, asset valuation, and due diligence for the Ethiopian Shipping and Logistics State Enterprise (ESLSE).</p>
October 2015 to November 2015	<p>Economist, Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ), Egypt</p> <p>Developed a framework and legislation for a structured, public-private dialogue to support the policy making process (EU Funded).</p>
April 2015 to August 2015	<p>Business Consultancy Expert, BDO, Jordan</p> <p>Provided technical assistance and expertise to the EIB Funded Jordan SME Growth Program (ACCELERATE with JEDCO).</p> <p>Developed SME Observatory and tools for the SME Growth Program.</p>
February 2015 to June 2015	<p>Short Term Expert, DAI Ltd., Botswana</p> <p>Worked on the Organizational Health Assessment for the Southern African Development Corporation Secretariat.</p> <p>Developed planning policy, budgeted, and implemented procedures, developed strategic key performance indicators, as well as designed monitoring and evaluation systems.</p>
January 2015 to December 2017	<p>Team Leader, Norm Consulting Danismanlik AS, Turkey</p> <p>Provided technical assistance and oversight to the establishment of the Bafra Business and Export Development Unit</p> <p>Recruited and trained staff on strategic planning, export development, and business support initiatives.</p>

October 2008	M&E, Pohl Consulting Group, Jordan Conducted the final evaluation of the AS ASEZA program under the Aqaba Special Economic Zone Authority.
May 2003	Team Leader / Restructuring Expert, Transtec, Jordan Served as Team Leader on the EU EJADA Project to provide financial restructuring support to the Arab Centre for Engineering Services.
October 2000 to January 2001	Team Leader / Restructuring Expert, Maxwell Stamp, Jordan Served as Team Leader on the EU Jordan Business Service Team Project to provide financial restructuring support to the Arab Centre for Engineering Services.
September 1998 to January 1999	Program Design Expert, P-E International, Jordan Conducted Program identification for the €40 million Industrial Modernization Program on behalf of EU DG1b. The project included analyzing the private sector, identifying the needs of industrial modernization analysis of access to finance and the design of a sustainable credit guarantee scheme.

## LANGUAGES

---

English (5S, 5R), Arabic (1S, 1R)

## ROLE ON THE ASSESSMENT TEAM

---

The Team Leader will be responsible for (1) providing team leadership; (2) managing the team's activities, (3) ensuring that all deliverables are met in a timely manner, (4) serving as a liaison between the USAID and the Assessment team, and (5) leading briefings and presentations. Due to the health crisis and uncertainty for international travel, the Team Leader will most likely provide virtual expertise and team leadership alongside the Assessment and Public/Municipal Finance Subject Matter Expert to the two Jordan based Local Researchers.

## LOUIS PICARD: CONSULTANT

### PROFESSIONAL PROFILE

---

Dr. Louis Picard holds a PhD in Political Science and has over forty year of experience in Local Government, Municipal Development, Public Service Reform, Democracy and Government, and is a renowned international expert in Local Governance and Local Economic Development. He brings extensive experience providing MEL services for USAID and has participated in evaluations and economic assessments in the West Bank, Morocco, and Pakistan. Dr. Picard is able to speak to diverse audiences on Public/Municipal Finance. He has authored 14 books, with over 20 articles on local governance and development. Dr. Picard is currently a tenured Professor at the University of Pittsburgh, which boasts a prestigious program in public sector management and finance.

### EDUCATION

---

PhD, Political Science, University of Wisconsin, United States, 1977

MA, Political Science, University of Wisconsin, United States, 1970

BA, History & Political Science, University of Michigan, 1965

### PROFESSIONAL EXPERIENCE

July 2018 to July 2020	Administrative Overload, University of Pittsburgh, United States Director, African Studies Program, 2018-2019 Director, PHD program in Public Policy, 2019 Director, Masters Degree Program in Public Administration, 2019-2020
October 2012 to February 2018	External Consultant, University of Pittsburgh (USAID/West Africa Evaluation and Analytical Services for the Regional Peace and Governance Programs), United States Supervised evaluation research carried out in West Africa (ECOWAS and Chad. Developed and carried out Evaluation Training in West Africa in Process and Impact Evaluation. Team leader in sub-contract with the Mitchell Group.
October 2011 to June 2018	Director, Contracted Research Graduate School of Public and International Affairs, University of Pittsburgh, United States Managed contractual relationships with NORC funded projects, IBTCI and MSI proposal submissions. Coordinated impact evaluation research with Department of Political Science. Coordinated with the University of Pittsburgh Office of Research on proposal and project development.

June 2010 to August 2010	Governance Consultant, University of Pittsburgh (USAID), Capacity Building in Political Parties in Morocco.
February 2010 to November 2010	Local Government Consultant, Management Systems International (MSI) (USAID), Rural Development and Local Government, South Africa & Tanzania Carried out three desk studies.
October 2009 to March 2010	Consultant, Human Resource Development Research (United Nations Development Program), United States Carried out research and prepared research report.
June 2009 to July 2009	Consultant, MSI (USAID), South Sudan Member of International Team, (DFID and EU) assessing capacity of public service in Southern Sudan.
June 2007 to December 2007	Senior Research Fellow, National Defense University, (USDA, Department of Defense), United States. Carried out research on African Security.
June 2006 to December 2006	Consultant, Stakeholder Analysis of Decentralization (World Bank), Guinea Conakry Carried out research and provided support with project design.
June 2005 to July 2005	Consultant, PADCO (World Bank), Development of Municipal Funds in Palestine, Ramallah, Palestine Carried out research on the creation of five municipal funds in the West Bank and Gaza.
September 2003 to December 2003	Consultant, Decentralized Governance in Ghana (Public Administration Service), United States & Ghana Evaluation of USAID funding community development and economic empowerment program.
September 1993 to Present	Professor, University of Pittsburgh, United States Teach Courses in Governance, Human Security and International Development Carry out independent research in Governance, Human Security and International Development

1991-1994	Consultant (Part Time), (World Bank and UNDP), Financial Management, Local Governance and Capacity Building in Eritrea and Ethiopia. Program Coordinator and Team Leader for Design and Evaluation Work.
1989-2008	Advisor and Reviewer, University of Pittsburgh, African Training and Research Centre in Administration for Development (CAFRAD), Morocco (Volunteer Position) Provided advice and reviewed manuscripts.
September 1987 to August 1993	Associate Professor, University of Pittsburgh, United States Taught Courses in Governance, Human Security and International Development. Carried out independent research in Governance, Human Security and International Development.
September 1983 to August 1987	Associate Professor, University of Nebraska-Lincoln, United States Taught courses in comparative politics, international development and public administration. Carried out independent research.

## LANGUAGES

---

English (5S, 5R), French (2S, 2R), Swahili (2S, 2R)

---

## ROLE ON THE ASSESSMENT TEAM

---

The Subject Matter Expert will serve as a member of the Assessment team, providing quality assurance on analytic issues, including methods, development of data collection instruments, protocols for data collection, data management and data analysis. S/He will oversee the training of all engaged in data collection, ensuring highest level of reliability and validity of data being collected. S/He is the lead analyst, responsible for all data analysis, and will coordinate the analysis of all data, assuring all quantitative and qualitative data analyses are done to meet the needs for this assessment. S/He will participate in all aspects of the assessment, from planning, data collection, data analysis to report writing. Due to the health crisis and uncertainty for international travel, travel is not anticipated for the Assessment and Public/Municipal Finance Subject Matter Expert. Rather, the Expert will provide virtual guidance and technical expertise alongside the Team Leader to the two Jordan based Local Researchers.

PROFESSIONAL PROFILE

---

Ms. Orouba Sabbagh is an economic and financial assessment expert with over fifteen years of experience designing and conducting evaluations that cover economic development, business and investment environments, local development projects, public financial management, and fiscal policies. Ms. Sabbagh brings extensive experience with data collection, processing, and analysis, data uses for economic development analysis, economic modelling and forecasting, and decision-making through quantitative and qualitative analysis. In her previous roles she has designed and implemented an array of mixed-methods evaluations and assessments, utilizing qualitative and quantitative data analysis software such as EViews and STATA as well as economic modeling software such as GAMS and GEMPACK. She is skilled in building economic models for the production of evidence-based recommendations and has even conducted trainings on econometric modelling for USAID Fiscal Reform and Public Financial Management Project staff. In addition to working on a number of USAID funded projects and evaluations, Ms. Sabbagh has experience conducting monitoring and evaluation across a variety of public and private actors, including public sector ministries and agencies, central governments, local and municipal authorities, private sector organizations, international financial institutions, and donors and international organizations working in Jordan. Ms. Sabbagh is bilingual (Arabic and English) and holds a Master of Business Administration in Banks Management.

EDUCATION

---

MBA, Banks Management, Hashemite University, Jordan, 2005  
BSc, Financial Economics, Hashemite University, Jordan, 2003

PROFESSIONAL EXPERIENCE

---

September 2018 to December 2019	<p>Fiscal Reform and Public Financial Management Consultant, USAID Fiscal Reform Project (Deloitte), Jordan</p> <ul style="list-style-type: none"> <li>• Provided skill development to researchers on USAID Fiscal Reform and Public Financial Management project, which included trainings on the use of Excel and EViews programs for econometric modelling and economic analysis</li> </ul>
April 2018 to Present	<p>Public Financial Management Consultant, World Bank Group, Jordan</p> <ul style="list-style-type: none"> <li>• Compiled data and built a financial database for the 100 municipalities in Jordan (revenue, expense, cash flow, and financial position), which were used to create reports and inform decision-makers</li> </ul>

	<ul style="list-style-type: none"> <li>Developed annual and quarterly reports for municipalities, prepared Amman Vision 10-year business plan, and measured the impact of shocks and policies on municipality-level financial systems</li> </ul>
March 2018 to July 2018	<p>Freelance Consultant, The Specialists Development and Financial Consulting, Jordan</p> <ul style="list-style-type: none"> <li>Provided consulting services to local enterprises seeking to increase competitiveness, long-term growth, and investments in human capital</li> <li>Evaluated the current investment climate by analyzing macro and micro level policies and building economic models</li> </ul>
November 2016 to August 2017	<p>Senior Investment Promotion Officer, Jordan Investment Commission, Jordan</p> <ul style="list-style-type: none"> <li>Oversaw development and modernization strategies in Jordan including identifying and promoting investment opportunities, building relationships with potential investors, and automation of the investment Window</li> <li>Conducted specialized research studies to identify priority sectors and potential high return investment opportunities within Jordan</li> </ul>
August 2010 to October 2016	<p>Senior Economics and Research Coordinator, Ministry of Planning and International Cooperation, Policies and Strategies Department, Jordan</p> <ul style="list-style-type: none"> <li>Collaborated with the World Bank to identify and implement reforms to improve Jordan's business environment, investment climate, and competitiveness, which was later included in the Doing Business Report</li> <li>Participated in the development of "Jordan 2025" a national strategy to create a sustainable, stable, and prosperous economy</li> <li>Prepared sectoral and macroeconomic indicators related to fiscal and investment profiles, which were then used for analysis and reporting</li> </ul>
February 2010 to August 2010	<p>Economic Analyst, USAID Input-Output Tables Project (Department of Statistics), Jordan</p> <ul style="list-style-type: none"> <li>Collaborated with National Accounts Department to obtain and process data required for building the Input-Output tables</li> <li>Conducted capacity building for project team, which included the preparation of a detailed user's guide to understand the Input-Output tables</li> </ul>
June 2009 to November 2009	<p>Results-Oriented Budget Document Development Advisor, USAID Fiscal Reform Project (Deloitte), Jordan</p> <ul style="list-style-type: none"> <li>Developed activity-level budget information including manpower estimates, cost estimates, and written narratives to explain public service provided through the activity, goals and objectives, and issues faced during the project</li> <li>Managed other budgetary tasks for the Fiscal Reform and Public Financial Management Project</li> </ul>

- |                              |                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| August 2008 to February 2009 | Senior Investment Analyst, Global Investment House, Jordan <ul style="list-style-type: none"> <li>• Analyzed economic sectors, companies, and documented economic trends to provide investment recommendations and produce regular reports</li> <li>• Prepared research strategies and action plans and monitored their implementation to ensure proper and organized research</li> </ul> |
| April 2006 to August 2008    | Financial Analyst, Ern Capital (WDAB Investments), Jordan <ul style="list-style-type: none"> <li>• Analyzed target markets, companies, and types of investments in order to prepare investment recommendations and summaries for the portfolio under management</li> </ul>                                                                                                                |

## LANGUAGES

---

English (5S, 5R), Arabic (5S, 5R)

## ROLE ON THE ASSESSMENT TEAM

---

The Local Researcher will assist with data collection, analysis and data interpretation. Due to the health crisis and uncertainty for international travel, Local Researchers will be the face of the Assessment Team on location in Jordan and will collaborate remotely with the Team Leader and Assessment and Public/Municipal Finance Subject Matter Expert. They will have basic familiarity with economic growth and development topics, as well as experience conducting surveys, interviews, and focus group discussion, both facilitating and note taking. They will also assist in preparation of data collection tools and transcripts, as needed. Local Researchers will also assist with logistics and administrative tasks, including arranging lodging, transportation, meeting and work space (as needed), and setting appointments, and supporting the team with business center support (e.g. copying, internet, and printing). The Local Researchers will have a good command of English and Arabic and conduct the data collection. They will also assist the Team and the Logistics Coordinator, as needed. They will report to the Team Lead.



## PROFESSIONAL PROFILE

---

Dr. Sameh Ajlouni is an economist with over two decades of experience working in the economic and financial sector in Jordan. Dr. Ajlouni is trained in a variety of social research methods and has extensive experience with economic modeling, econometrics, policy analysis, designing and conducting evaluations, and qualitative and quantitative data analytics. Dr. Ajlouni has extensive experience working with a variety of statistical and economic software programs including SPSS, STATA, and EViews, and has conducted trainings and workshops on the use of this software in monitoring and evaluation. In addition to his academic experience and practical knowledge of the banking and trade sector, Dr. Ajlouni has also served as an independent evaluator and subject matter expert for a variety of USAID funded projects focusing on economic and financial development, which included the Fiscal Reform and Public Financial Management Project, the Energy Sector Capacity Building Project, and a Business Investment Study of the Aqaba Special Economic Zone. In previous work with USAID he has designed methodologies, drafted data collection tools, identified KPIs, conducted evaluations and assessments, and produced final reports. Throughout his tenure, Dr. Ajlouni has engaged with a variety of stakeholders from small NGOs and consulting firms to larger government ministries and international donors. Dr. Ajlouni holds a PhD in Economics and is bilingual (Arabic and English).

## EDUCATION

---

PhD, Economics, University of Jordan, Jordan, 2012  
 MA, International Trade, University of Jordan, Jordan, 2006  
 Diploma, Banking and Finance Studies, The Institute of Banking Studies, Jordan, 2002  
 BSc, Statistics, Yarmouk University, Jordan, 1992

## PROFESSIONAL EXPERIENCE

---

January 2015 to Present	Assistant Professor of Economics, Yarmouk University, Jordan <ul style="list-style-type: none"> <li>Teaches courses on macroeconomics, microeconomics, mathematical economics, research methods, economic theory, applied statistics, public finance and econometrics</li> <li>Current research focusses on energy policy and economic growth in Jordan</li> </ul>
October 2019 to December 2019	External Consultant, The Lutheran World Federation, Jordan <ul style="list-style-type: none"> <li>Conducted an end of project evaluation of LWF's protection activities implemented in Irbid, Jordan</li> </ul>

June 2019 to December 2019	<p>External Consultant, USAID Fiscal Reform and Public Financial Management Project (Leading Point Management Advisory Services Co.), Jordan</p> <ul style="list-style-type: none"> <li>Developed the logical frameworks, key performance indicators, and data analysis methodology for a project analyzing public expenditure on programs supporting gender equality in Jordan</li> </ul>
May 2015 and September 2019	<p>External Trainer, Jordan Development Evaluation Association (EvalJordan), Jordan</p> <ul style="list-style-type: none"> <li>Developed and provided trainings to EvalJordan on two separate occasions, first a descriptive statistics training in May 2015, and then a statistical and econometric analysis training in September 2019</li> </ul>
February 2019 to April 2019	<p>External Consultant, USAID Fiscal Reform and Public Financial Management Project (Al Jidara), Jordan</p> <ul style="list-style-type: none"> <li>Provided four days training to project staff covering macroeconomic theory and financial programming</li> </ul>
September 2018 to February 2019	<p>External Consultant, DAI and Arab Women's Fund, Jordan</p> <ul style="list-style-type: none"> <li>Conducted a baseline study for a DFID-funded project on financial inclusion among Mobile Money users</li> <li>Developed data collection tools, identified key performance indicators, and analyzed the data both descriptively and econometrically</li> </ul>
November 2016 to March 2017	<p>External Consultant, GIZ Employment Promotion Program (Dajani Consulting), Jordan</p> <ul style="list-style-type: none"> <li>Conducted an assessment of supply and demand-side factors impacting the Jordanian labor market, with a particular emphasis on conducting and assessing key informant interviews</li> </ul>
January 2017 to October 2017	<p>External Consultant, USAID Energy Sector Capacity Building (ECO Consult, Jordan</p> <ul style="list-style-type: none"> <li>Assessed the work related to the Energy Service Providers (ESPs) capacity development, approach, and priorities</li> <li>Conducted an evaluation of the outcomes (short and medium-term) of ESCB's private sector development component, and developed and assessment report</li> </ul>
September 2012 to January 2015	<p>Lecturer of Economics, Yarmouk University, Jordan</p> <ul style="list-style-type: none"> <li>Taught courses on macroeconomics, microeconomics, mathematical economics, research methods, economic theory, applied statistics, public finance and econometrics</li> </ul>
January 2012 to July 2012	<p>Monitoring and Evaluation Manager, Mercy Corps, Jordan</p> <ul style="list-style-type: none"> <li>Planned and implemented evaluations and studies, which included developing data analysis methodologies and data collection tools</li> <li>Responsible for collecting and analyzing qualitative and quantitative data for reporting</li> </ul>

- |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| February 2011 to March 2011 | <p>Researcher and Business Analyst Consultant, USAID Business Investment Study (New Directions Consulting Services Co. Ltd.), Jordan</p> <ul style="list-style-type: none"> <li>• Provided technical assistance to identify the business impediments hindering investment growth in Aqaba with attention to internal ASEZA laws and regulations as well as the external business environment and infrastructure</li> </ul>                                                |
| May 2009 to December 2010   | <p>Economic and Policy Advisor, The International Labor Organization, Jordan</p> <ul style="list-style-type: none"> <li>• Analyzed fiscal and monetary policies, data and trends, and possible policy options and their implications for private businesses in Jordan with special attention given to SMEs</li> <li>• Monitored and analyzed macroeconomic trends and developed comprehensive, multisectoral policies and strategies for employment generation</li> </ul> |
| October 2009 to April 2010  | <p>Independent Labor Market Expert, USAID Business Investment Study (New Directions Consulting Services Co. Ltd.), Jordan</p> <ul style="list-style-type: none"> <li>• Provided technical and policy assistance to the Aqaba Special Economic Zone (ASEZA) by reviewing the ASEZA scholarship program and recommending improvements</li> <li>• Conducted a labor market assessment of Aqaba</li> </ul>                                                                    |
| July 2007 to April 2009     | <p>Economic Researcher, Ministry of Information and Communications Technology (Directorate of Policies and Strategies), Jordan</p> <ul style="list-style-type: none"> <li>• Formulated and evaluated MoICT policies and initiatives</li> <li>• Built econometric models and identified indicators, which were used to analyze economic trends, the impact of policies, as well as external and internal shocks</li> </ul>                                                 |
| December 2005 to July 2007  | <p>Economic Researcher, Quality Horizons, Jordan</p> <ul style="list-style-type: none"> <li>• Built a socio-economic database, intended to provide an intelligent and user-friendly research system</li> <li>• Designed and conducted a variety of studies and evaluations including feasibility studies, benchmark studies, performance evaluations, and market analyses</li> </ul>                                                                                      |

## LANGUAGES

---

English (5S, 5R), Arabic (5S, 5R)

## **ANNEX VI: MELA TEAM SUPPORT**

**Ms. Rasha Akkad**, Jordan MELA MEL Specialist: Ms. Akkad managed the SNBN Assessment and its deliverables, maintained primary communication with AID and CITIES, and provided technical surge support during the Assessment to consider the topic of Crisis Response (COVID-19).

**Mr. Basheer Al Zoubi**, Consultant: Mr. Al Zoubi provided technical survey support during the Assessment to consider the topic of Tax Administration.

**Mr. Bradley Fusco**, The Kaizen Company: Mr. Fusco provided surge Team Lead support.