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**TECHNOLOGY AND INNOVATION WITH A FOCUS
ON THE 2030 DEVELOPMENT AGENDA**

**COMMUNITY-BASED INNOVATION FOR IMPROVED
SOCIALWELL-BEING**



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Acknowledgments

This report was prepared by Dr. Allain Daou, Professor of entrepreneurship at the Olayan School of Business at the American University of Beirut and expert in sustainability and social innovation. This report is prepared in the Technology for Development Division, under the guidance and supervision of Dr. Nibal Idlebi, the Chief of Innovation Section. Ms. Lize Denner, from the Innovation Section, contributed to the review process.

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Executive summary

This report looks at *community-based innovation and technology for improved social well-being*. The report explores the issues of social well-being in the context of communities and the way innovation and technology can be instrumental in alleviating these issues. It ensures a better understanding of the importance of innovation and technology to foster social development by engaging stakeholders at the community level. It provides communities and civil society with suggestions on innovative tools and practices that, when implemented, could, improve social well-being.

As innovation is linked to all three pillars of sustainable development: economy, society, and environment¹, it can represent an opportunity to use a bottom-up approach to innovate in order to reduce inequality and increase well-being. This includes poverty, education, health, employment, environment, agriculture, governance, etc. Given their embeddedness in the community, community-based initiatives are better targeted given the deep knowledge of the local context. Such community-based innovations pave the road to decentralization, increase the efficiency of policies and regulations hence increasing their probability of success, and promote improved social well-being. Community-based innovation and technology for improved social well-being speaks to a number of Sustainable Development Goals (SDG), mainly:

- Goal 1, "End poverty in all its forms everywhere";
- Goal 3, "Ensure healthy lives and promote well-being for all at all ages";
- Goal 5, "Achieve gender equality and empower all women and girls";
- Goal 11, "Make cities and human settlements inclusive, safe, resilient and sustainable";
- Goal 16, "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels".²

Delimiting community-based innovation

In this report, we have defined community-based innovation, while focusing our discussion on the specific context of the Arab region. We focused on technology as an enabler and driver for community-based innovation for social well-being. This report highlights numerous successful cases from around the world and from the Arab region specifically, taking into consideration the specific context of our communities. We have presented recommendations for the implementation of community-based innovation in the Arab region via technology.

Community-based innovation is grounded in community needs and aims to achieve positive change for the community and particularly its most vulnerable members. It is a process that can result in new organizational, process or marketing innovation or policy and/or it could be manifested as an outcome such as a new or improved product or a service.³ It directs collective or individual creativity to answer the community's needs. Therefore, we consider innovation and technology to be both a process and an outcome.

For communities to innovate, they have to have the ability to:

1. Recognize an urgent need that affects their well-being.
2. Organize themselves and have governance structure that enable innovation and problem solving.

¹ESCWA. (2017). *Innovation policy for inclusive sustainable development in the Arab region*. [Online]. ESCWA. Retrieved from <https://www.unescwa.org/publications/innovation-policy-inclusive-sustainabledevelopment-arab-region>

² United Nations (2015). *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*. Available from http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E, pp. 25-26.

³UNHCR. (2008). A community-based approach. Retrieved from <http://www.refworld.org/pdfid/47da54722.pdf>

3. A local culture and local knowledge indigenous practices that can combine with new and ideas and technologies.
4. Local leadership be it through traditional or non-traditional figures.

Given the specificity of the Arab region in terms of culture, socio-economic development, access to technology among other indicators, it is important to have a contextualized look at community-based innovation, as needs and solutions can vary substantially from one region to the other. Hence, it becomes imperative to identify the main characteristics and success factors that promote development of specific sectors at the local level as it will be valuable for the elaboration of projects and policy.

Culture is such a specificity that plays an important role in development. Innovation must be based on the unique values of each community and aimed to preserve them. Time and again research in the field of innovation has shown that there is a strong relationship between innovation and culture where culture is said to have a deep influence on the innovative ability of a community. Therefore, community readiness is essential and is enhanced by:

1. Informing the community when the change is going to be community-wide and community-based. There is a necessity for the presence of “willingness to be open to change” within the community.
2. Integration and belonging that are essential factors that community members and leaders should have towards the innovative initiative to avoid distraction and to ensure long term commitment to the process.
3. Networking that is a key to success. Therefore, identifying and amplifying local networks within a community is considered essential for long-term success of community change.

Community-based innovation and SDGs

SDG1 (No poverty): Innovation is one of the key driving forces for poverty reduction.⁴This is done through engaging with local communities as it is a critical factor to eradicate poverty. Therefore, there is a necessity for innovative interventions based on community needs and resources in order to reach zero poverty by 2030.

SDG3 (Good health and well-being): Poverty and health are interconnected, where poverty leads to living in unhealthy contaminated areas with no water sanitation, malnutrition, and low immunity. This all leads to the spread of diseases that become community-wide. As health is very context specific, interventions must be as well. Hence, given the institutional, social, cultural, and technological specificities of different groups within a region, community-based health interventions are increasingly emerging as they target community specific problems.

SDG5 (Gender equality): Community-based innovation is able to eliminate the barriers to gender equality by ending all forms of discrimination against women and girls; eliminating all forms of violence against all women and girls in the public and private spheres, including trafficking and exploitation; eliminating all harmful practices; recognizing and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate; ensuring women’s full and effective participation and equal opportunities for leadership at all levels of decision-making in political,

⁴Linna,P.(2010). *Community-level entrepreneurial activities: Case study from rural Kenya*. International Journal of Business and Public Management (ISSN: 2223-6244) Vol. 1(1): 8-15. Retrieved from: <https://www.mku.ac.ke/research/images/journals/vol%201/Community-Level%20Entrepreneurial%20Activities-%20Case%20Study%20from%20Rural%20Kenya%20final.pdf>

economic and public life; undertaking reforms to give women equal rights to economic resources; enhancing the use of enabling technology, in particular information and communications technology, to promote the empowerment of women; adopting and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels.

SDG11 (Sustainable cities and communities): Migration to cities has led to the formation of poverty belts and more discrimination. The gap between the poor and middle and high income classes has become wider leading to security threats in cities and between communities. In order for cities to ensure growth, these challenges should be overcome in a sustainable manner, i.e. reducing pollution and poverty. Therefore, it is very essential for municipalities, officials, and private institutions to start thinking of smart and sustainable solutions for cities. One way to look for solutions is through community-based innovation. Cities need to plan and implement for new initiatives to become more environmental friendly, safe, inclusive, and thus sustainable. This will need urban planning and innovation in terms of infrastructure. Integrating smart solutions within a city will contribute to solving the problems from their roots, and will also be a cost saving strategy as it ensure sustainable solutions to tackle problems of water management, waste management, mobility and energy.

SDG16 (Peace, justice and strong institutions): Community based-innovation modifies the balance of power and shifts it toward local activists who are profoundly and individually affected by the long-term impacts of any alteration that occurs in the community. For instance, local communities in many countries act to fight corruption because they are suffering from the dysfunctional systems in which corruption lives and grows in their work place and within their society. Therefore, gender equality; transparency; accountability; participatory governance; equity, non-discrimination and inclusiveness; rules based decision making; are values and basics that every community should have in order to develop.

Factors influencing community-based innovation

Community-based innovation takes different forms including grass-roots innovation, social innovation and crowd-sourcing innovation. Whatever form or approach used for community-based innovation, the main concern in most of the Arab countries is the lag in development compared to other parts of the world, with the absence of scaled-up innovations. What is significant is that the current system of innovation in the Arab region is predicted to have serious effects on the long run, especially of the availability of scarce resources and therefore the importance of sustainability. Therefore, change is required in order to enhance innovation and reach social well-being in all the Arab countries. Several cases on innovation and SDGs in some Arab countries were portrayed in this report with presentation of SDG facts and figures. Some enablers and barriers of community-based innovation were showcased as well. Yet, technology is considered one of the most powerful enablers for innovation, sustainability and development. This is because technologies provide the ways to act smarter and more sustainably and contribute to higher levels of economic output by providing human capital with new goods and services that can enhance social-well-being.

Enablers	Barriers
<ul style="list-style-type: none"> ➤ Supportive Culture ➤ Citizen engagement ➤ Technology ➤ Human capital ➤ Rigid social networks ➤ Accountable and legitimate institutions 	<ul style="list-style-type: none"> ➤ Lack of communication and coordination ➤ Lack of reliable information and access to it ➤ Informal limits (culture) ➤ Technology lock-in ➤ Institutional lock-in

The way forward

To promote community-based innovation governments in general and specifically in the Arab world need to focus on the role of public authorities; scaling up and capacity building.

Appropriate policies and regulations enhance innovation and motivate people to seek new ways to solve current problems. The role of the government is essential in permitting the implementation of community-based innovations. When governments both at local and national levels are involved, it gives credibility to the project as authorities have the authority, rules, tools and resources to properly organize and implement any community-based initiative. It is a fact that community-based innovation requires public sector support. Unfortunately, in developing countries, public institutions are weaker and do not prioritize such assistance to communities. Governments, through regulations and policies, are required to minimize risks associated with innovation and facilitate the implementation and scaling of effective projects. Financial support is a key tool to any successful intervention and it is mainly the role of the government. Governments can promote community-based innovation by:⁵

- Adopting it
- Reducing its risk
- Joining its forces with other private innovators
- Using regulations and policies to encourage it

Scaling community-based innovation might be the most important stage in the stages of innovation. Existing literature regards scaling as a final stage of the innovation process. Not every innovation is taken to scale due to many reasons such as specificity of community or failure to achieve its targets. Therefore, scaling a community-based innovation is said to occur only after identifying an effective initiative. This is because an idea, with its abstraction, can be grown, replicated, scaled, or adopted only when it's proven in practice. For assuring the best results, a scaling up mechanism needs to be planned and executed ahead of time. A key step is to understand the drivers and enablers that ensure that the initiative will go to scale and the barriers as well in order to eliminate them and their effects.⁶ Scaling up might take three forms, horizontal (transmission to more people), vertical (higher effects through rules and regulations), or functional (greater areas of commitment). A hybrid approach can be used as well, whereby two or the three forms are used concomitantly. Scaling up is a process that requires regular monitoring and evaluation.

An analysis of the community needs, capabilities, expectations and available resources should precede capacity-building which should be done in a participatory manner. All activities need to be transparent where every member knows his role and benefits and thus equality will increase and social cohesion will be present to foster innovation.

Additionally, there are other steps governments can do to maximize the potential for innovation. The most important thing is to consider community-based innovation as a priority, in all regulations and policies, and informally, in building an innovative culture. Permitting and enhancing connections and networking and cooperation between the different stakeholders such as citizens, government and the private sector, are essential. The establishment of partnerships with all important stakeholders should be facilitated and encouraged in order to benefit from their expertise, knowledge, and financial support. This,

⁵Boghani, A., & Jonash, R. (1993). The role of government in fostering innovation. Retrieved from: http://www.adlittle.com/uploads/tx_extprism/1993_q1_23-27.pdf

⁶Begovic, M., Linn, J., & Vrbensky, R. (2017). *Scaling up the impact of development interventions: lessons from a review of UNDP country programs*. Retrieved from: <https://www.brookings.edu/wp-content/uploads/2017/03/global-20170315-undp.pdf>

with transparency and openness and other regulations and actions, promotes trust between the government and citizens and facilitates the implementation of any innovation.

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Chapter 1 - Introduction

Motivation of this report

“In an age where community involvement and partnerships with civil society are increasingly being recognized as indispensable, there is clearly a growing potential for cooperative development and renewal worldwide.” (Kofi Annan, 2002)⁷

The accuracy of this statement echoes in the 2030 Agenda for Sustainable Development in Goal 11 that describes cities and human settlements, as potential cultivators of innovation and drivers of sustainable development.⁸ Building a sustainable community with social well-being spread among its members demands advanced socio-technical ideas and actions rising from the community’s needs. Today, with the technological revolution emerging from globalization, many are threatened to stay behind, leading to more severe global problems. Therefore, innovative approaches are needed to solve the new emerging problems. Enhancing the skills, capacities, and knowledge of communities is the starting point to a sustainable society. Putting people of concern at the core of policies and actions is another key factor for achieving sustainability and social well-being. It is not impossible to live in a healthy world where poverty is eradicated; with increasing equality, pollution is at its lowest levels, cities are inclusive, conflicts and violence are eliminated, and people trust accountable public institutions. These are some of the 17 Sustainable Development Goals (SDG) adopted by the world leaders.

Communities can be described as being geographical in nature, meaning a specific town, urban neighborhood or city, but it can also have a broader meaning. Different forms of communities exist, where members have something in common, for example a specific interest, belief system, or social norms and values. Each community is unique with its own problems, issues and regulatory contexts. Even if two communities experience similar problems, the specific manifestation of issues will be distinctive to the community itself. It also means that one-size-fits-all solutions developed at regional or national levels may not be effective in specific communities.

Community-based innovation provides solution to local problems. In general, innovation is the implementation of a new ways of achieving objectives and producing work. It can be completely new, a change into a current system, or something that already exists elsewhere implemented for the first time in the local context. This idea can be a product, service, policy and program, or a process.⁹

In the context of a community, the focus of innovation is on bottom-up approaches, such as grass-roots innovation, crowd-sourcing innovation, social innovation or citizen innovation, stemming from the community, its members and civil society. It is rooted in the perception that the community has the local knowledge, understands the problem and knows which issues are the most pressing. Community-based innovation, can lead to the development of new, innovative solutions for the community or to the adaptation of existing solutions to local conditions.

Some of these solutions could be of value in a broader context, possible for other communities that are experiencing similar issues. Therefore, it becomes necessary to understand the way community-based innovations can be scaled-up so that they can be adapted to other communities and even at national levels.

⁷ United Nations (2002). At the occasion of the International Day of Cooperatives (SG/SM/8289-OBV/281). Retrieved from <https://www.un.org/press/en/2002/sgsm8289.doc.htm>

⁸ United Nations. (2017). Progress towards the Sustainable Development Goals. Retrieved from: <https://sustainabledevelopment.un.org/sdg11>

⁹ ECOSOC (2006). *Definition of basic concepts and terminologies in governance and public administration (E/C.16/2006/4)*. Prepared for the Fifth Session of the Committee of Experts on Public Administration, 27-31 March, New York.

Community-based innovation does not speak to one specific SDG. Through its exploitation, it provides a community with the means to address several issues highlighted across all SDGs. For this study, the focus will be on improving the social well-being of communities. For social well-being, the focus falls on social development aspects that improve the quality of a person's life, such as social inclusion, employment, health, education, social welfare and governance.

Over the past years, scholars and policy makers came to acknowledge community-based innovation and technology as a crucial mechanism for improved social well-being. As innovation is linked to all three pillars of sustainable development: economy, society, and environment,¹⁰ it can present an opportunity to use a bottom-up approach to innovate in order to reduce inequality and increase well-being. This includes poverty, education, health, employment, environment, agriculture, governance, etc. Given their embeddedness in the community, community-based initiatives are better targeted given the deep knowledge of the local context. Such community-based innovations pave the road to decentralization, increase the efficiency of policies and regulations hence increasing their probability of success, and promote improved social well-being. Community-based innovation and technology for improved social well-being speaks to a number of Sustainable Development Goals SDG, mainly:

- Goal 1, "End poverty in all its forms everywhere";
- Goal 3, "Ensure healthy lives and promote well-being for all at all ages";
- Goal 5, "Achieve gender equality and empower all women and girls";
- Goal 11, "Make cities and human settlements inclusive, safe, resilient and sustainable";
- Goal 16, "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels".¹¹

In what follows, we will define community-based innovation, while focusing our discussion on the specific context of the Arab region. All this will be done while focusing on technology as an enabler and driver for community-based innovation for social well-being. We will be presenting successful cases from around the world and we will simulate the process used for the Arab region, taking into consideration the specific context of our communities. We will finally present recommendations for the implementation of community-based innovation in the Arab region via technology.

Definition of community-based innovation

Community

A community is a group of individuals identified as having a set of religious, background, cultural or other social characteristics and interests, which shapes a united identity. Any common interest or goal or characteristic can be the core behind the formation of a community, therefore, geographical factors are not the border for any community. This is shown in all the online communities that are built and communicate from different places. Moreover, within a perceived community, there might be sub-groups or communities that have more in common based on different characteristics such as social class, religion, or even language. At the same time, there might be a number of vulnerable groups that are not joined in a

¹⁰ ESCWA. (2017). *Innovation policy for inclusive sustainable development in the Arab region*. [Online]. ESCWA. Retrieved from <https://www.unescwa.org/publications/innovation-policy-inclusive-sustainabledevelopment-arab-region>

¹¹ United Nations. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development (A/RES/70/1)*. Retrieved from http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E, pp. 25-26.

community, they do not perceive themselves as a community, yet officials need to address their existence.¹²

Some communities might be explicitly recognized and have power of auto-determination and be inclusive within the nation. Yet, in many cases, minorities or vulnerable communities struggle to have a decent life within any bordered area. Similar to what is witnessed today, there are a lot of temporary communities that are born due to unforeseen circumstance such as refugees and displaced persons that form temporary “communities”, yet they do not perceive themselves as belonging to any community.

Due to the complexity of the definition of a community, we will be defining it for the sake of this report as: a group of people with common interests, needs, goals, and situations living within the boundaries of a nation. Our definition of a “community” includes both ideas of belonging and common understanding.¹³ Therefore, a community is a group of people who are part of collective action in a specific geographical locality sharing common local challenges and using collective action for solving problems facing these issues.

Innovation

Innovation is considered a recent concept in literature (1971), yet it is as old as mankind.¹⁴ This is because the human instinct has always been to overcome needs by creating tools that help to fulfill these needs. Since it is an abstract concept, it takes a lot of forms and therefore, has different meaning and definitions based on the source, the target, the tools, etc., for instance, innovation in a firm or private institution is different than national or social innovation. Generally innovation is falsely thought to be similar to creativity. Creativity is about coming up with ideas which are intangible and may or may not be applicable. Innovation on the other hand, is a continuously developing process or change which leads to value creation.

The Oslo Manual definition of innovation is broad, considering innovation as the result of advanced research and development (R&D) leading to new industrial products and services, in addition to new marketing or work organization methods in business practices. In those contexts, innovativeness lies more in original ways of using technology than in its ownership. A second observation involves the scope as if the innovation is a new or improved offering in its own context (for example, a given market, country or organization). Both considerations are important as innovation does not necessarily result from cutting-edge original development of scientific knowledge. Its relevance and impact are heightened if the innovation addresses local issues and improves livelihoods of the populations concerned.¹⁵

Successful innovation is what contributes to a country’s well-being in a meaningful way thereby leading to its development.¹⁶ This definition of successful innovation is what we will be using in our report. Therefore, we define innovation as offering new or substantially improved products, services, processes, organizational routines, and production and distribution methods, in terms of their characteristics,

¹² UNHCR. (2008). *A community-based approach in UNHCR operations*. Retrieved from: <http://www.refworld.org/pdfid/47da54722.pdf>

¹³ Ono, J., Yoshimura, S., Yashiro, M., & Velasquez, J. (2005). *Innovative communities: people –centered approaches to environmental management in the Asia-Pacific region*. Retrieved from: <http://archive.unu.edu/unupress/sample-chapters/InnovativeCommunities.pdf>

¹⁴ ESCWA. (2017). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/innovation-policy-inclusive-sustainable-development-arab-region-english_0.pdf

¹⁶ Fathima, N. (2015). *Analysis of innovation entrepreneurship in Arab world*. Carnegie Mellon University. Retrieved from <https://pdfs.semanticscholar.org/e66f/16e5c388f0e168beb34e47d3f0997eb46bee>

capabilities, user friendliness, components or sub-systems.¹⁷ In the context of a community, the focus of innovation is on bottom-up approaches, such as grass-roots innovation, crowd-sourcing innovation, social innovation or citizen innovation, stemming from the community, its members and civil society.¹⁸

Community-based innovation

It has been clear that innovation for social well-being needs a dynamic local environment to ensure success of any endeavor. There is recognition both from academics and practitioners that successful innovation requires community participation. This was clearly reflected in the text of Agenda 21, which is a willingly implemented action plan of the United Nations with regard to sustainable development. The Earth Summit of 1992 held in Rio de Janeiro, Brazil, was a milestone in emphasizing the importance of local community action. Its importance has been evidenced as well by the mishaps of conventional approaches to sustainability and social well-being, such as top-down initiatives that did not reach expected goals. Since, we have seen a recognition of community-led initiatives, where communities have been applying a set of innovative approaches that utilize local knowledge and resources with some contradictory results. Political, cultural, and technological are some of the challenges that face such innovation. Therefore, it is essential to develop a clear vision of a successful innovation initiative for us to achieve social well-being through recognizing and inspecting the major factors that enhance community-based innovation.¹⁹

Innovation and community-led initiatives are pillars of sustainable development. Yet it is just recently that they started to be recognized as such.²⁰ When innovation is linked to communities, it infers change in traditional ways and lead to the formation of new values that impose changed behaviors and roles. Community innovation usually involves a new process through which innovative solutions to existing problems are carried out, and requires a basic change in governance structures and policies. A social-innovation can bring to local communities new ways to tackle social problems leading to changes through the developmental ideas and capabilities of its members.²¹ Bridging the gap between community activities and innovation will help solve long-lasting communal problems in the best possible way.

A community-based structure implies that the community members are actively participating and their capacities, skills and resources are recognized and built upon to bring protection and solutions, and supports the community's own goals. In such situation, multiple factors must be considered such as the how beneficiaries are affected, role of the different component of the community such as gender, community dynamics and structure, as well as political context and other priorities. As well, what happens in one community may not be applied in another context as local factors play a role such as population demographics, political processes, power dynamics, culture and local engagement. This all ensures that approaches on the community level allow for the proposal of policies and practices that are sensitive to the prospects and restrictions specific to particular communities.²²

¹⁷ European Commission. (n.d). Oslo manual. The measurement of scientific and technological activities. Retrieved from <http://www.oecd.org/science/inno/2367580.pdf>

¹⁸ ESCWA. (2017). *Innovation policy for inclusive sustainable development in the Arab region*. [Online]. ESCWA. Retrieved from <https://www.unescwa.org/publications/innovation-policy-inclusive-sustainable-development-arab-region>

¹⁹ Ono, J., Yoshimura, S., Yashiro, M., & Velasquez, J. (2005). *Innovative communities: people –centered approaches to environmental management in the Asia-Pacific region*. Retrieved from: <http://archive.unu.edu/unupress/sample-chapters/InnovativeCommunities.pdf>

²⁰ Seyfang, G., & Smith, A. (2007). *Grassroots innovations for sustainable development: Towards a new research and policy agenda*. *Environmental politics*, 16(4), 584-603

²¹ ESCWA. (2017). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/innovation-policy-inclusive-sustainable-development-arab-region-english_0.pdf

²² Arndt, R., Craddock, A., Moriarty, B., Cheney, R., Etkin, S., Posavetz, N., & Sanders, C. (2009). *Building a Community-Based Sustainable Food System*. *University of Michigan Urban & Regional Planning Capstone Project*. Retrieved from: <http://closup.umich.edu/publications/misc/Community-Based-Sustainable-Food-Systems.pdf>

Regarding its role, a community-based approach can assist communities in preventing social problems and dealing directly with those that arise, rather than having external mediators step in and take these tasks. Some of the drawbacks that a community-based approach implementation might face is the time-consuming characteristic, where it does not always lead to a quick and visible result. However, when it reaches its goals, it is ensured that they are sustainable and effective ones, rather than quick fixes that do not solve the problems. Therefore, taking the time to understand the local specifics is essential. It is essential as well to allocate time and resources to build the community's engagement, develop common objectives, and build consensus on the best participatory approach that fits best. These steps are necessary for the success of the approach.²³

There are some key elements that every community-based process needs. Sensitivity to the specific needs and contributions of the youth and elderly, low income populations and women, that are often the targeted members of initiatives, is one of these elements. Community-based innovators have to think both short-term and long-term and implement their initiatives along this time horizon. As well, for initiatives to be successful we must see change as a process. It is said that "change is inevitable, but progress is optional." Community innovators are urged to try to prove that progress, not just change, is inevitable for every community.²⁴

Community-based innovation is grounded in community needs and aims to achieve positive change for the community and particularly its most vulnerable members. Such projects mobilize the resources of the community for the greater benefit of its members. It is a process that can result in new organizational, process or marketing innovation or policy and/or it could be manifested as an outcome such as a new or improved product or a service.²⁵ It directs collective or individual creativity to answer the community's needs. Therefore, we consider innovation and technology to be both a process and an outcome.

Local context such as location and culture play a key role in using tools and methodologies that are suitable. This implies that innovation from a community-based perspective is very contextual as what one innovative solution may suit one community and be harmful or unsuitable for another one. Despite that, all communities share some preconditions, which is an enabling and favorable environment allowing people and organizations to plan and act innovatively. Hence, communities must be able to:

1. Recognize an urgent need that affects their well-being.
2. Organize themselves and have governance structure that enable innovation and problem solving.
3. A local culture and local knowledge indigenous practices that can combine with new and ideas and technologies.
4. Local leadership be it through traditional or non-traditional figures.

Given the specificity of the Arab region in terms of culture, socio-economic development, access to technology among other indicators, it is important to have a contextualized look at community-based innovation, as needs and solutions can vary substantially from one region to the other. Hence, it becomes imperative to identify the main characteristics and success factors that promote development of specific sectors at the local level as it will be valuable for the elaboration of projects and policy.

²³ UNHCR. (2008). *A community-based approach in UNHCR operations*. Retrieved from: www.unhcr.org

²⁴ Walzer, N., & Cordes, S. (2012). *Overview of innovative community change programs*, *Community Development*, 43:1, 2-11, DOI: 10.1080/15575330.2011.653979

²⁵ UNHCR. (2008). *A community-based approach*. Retrieved from <http://www.refworld.org/pdfid/47da54722.pdf>

Chapter 2 - Types of community-based innovation

When innovation is community-based, its target, procedures and outcomes are different. Usually, community-based innovations target underprivileged community members and are inclusive. Different types of community-based innovation exist such as grassroots innovation, social innovation and crowd-sourcing innovation. There are other types of innovation or other titles of innovation such as bottom-up innovation, inclusive innovation, and frugal innovation. However, all these innovations have a common characteristic, targeting local community members and utilizing local potentials and capital.

Grassroots innovations, social innovations, and crowd-sourcing innovation are in their core essence inclusive innovations because they are able to reach social justice by narrowing the gap between different social groups. These innovations are specifically important in developing countries and communities. It is significant to mention that the absence of inclusiveness of any innovative initiative is a major reason behind the current lack of convergence between developing and developed countries.²⁶

Grassroots innovation

Grassroots innovations is increasingly drawing attention of scholars and practitioners in the fields of sustainability and social well-being. Grassroots innovations are systems of individuals and organizations cooperating to come up with new and bottom-up solutions to reach sustainable development and social well-being. These innovations build on local needs, considering local interests, values and culture of the targeted community. Grassroots innovations require committed activists to social change and development; this includes protecting the environment as well.²⁷ This type of innovation is still new in research and therefore more research is needed to know how grassroots networks cooperate and function and how they scaled up. This is an essential point since bottom-up innovation can be effective on a small scale and to a specific community, but if not scaled up, sustainability and social well-being will not be reached. For it to be effective, it cannot stay as a local innovation, it needs to be scaled up for it to reach sustainability.²⁸ Therefore, the problems and challenges to going to scale need to be further studied.

The community is an essential factor in this type of innovation. Social development programs usually depend on grassroots indigenous and community welfare actions.²⁹ Grassroots innovations and practices are based on human needs. As the previously mentioned cases show, such practices bring community members together to help vulnerable members in reaching social well-being and sustainability.³⁰ In this context, community-based initiatives should not send signals to minimize state responsibility, but on the contrary, it cannot reach its targets without the support of the government and its institutions. Grassroots innovations continuously challenge the current technologies used, values and practices and work on building new and developed organizations that promote social well-being.³¹ People and activists external

²⁶ United Nations. (2008). *Innovation for Sustainable Development: Local Case Studies from Africa*. Retrieved from <https://sustainabledevelopment.un.org/content/documents/publication.pdf>

²⁷ Seyfang, G., & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics*, Vol. 16, No. 4, 584 – 603. Retrieved from: http://base.socioeco.org/docs/seyfang_and_smith.pdf

²⁸ Smith, A. & Seyfang, G. (2013). Constructing grassroots innovations for sustainability. *Global Environ. Change*, <http://dx.doi.org/10.1016/j.gloenvcha.2013.07.003>

²⁹ Kaseke, E., & Midgley, J. (2012). *Indigenous Welfare and Community-Based Social Development: Lessons from African Innovations*. *Journal of Community Practice* Volume 20, 2012 - Issue 1-2: Social Development and Social Work: Learning from Africa. Retrieved from: <http://www.tandfonline.com/doi/abs/10.1080/10705422.2012.644217>

³⁰ Kaseke, E. & Midgley, J. (2012). *Indigenous Welfare and Community-Based Social Development: Lessons from African Innovations*. *Journal of Community Practice* Volume 20, 2012 - Issue 1-2: Social Development and Social Work: Learning from Africa. Retrieved from: <http://www.tandfonline.com/doi/abs/10.1080/10705422.2012.644217>

³¹ Feola, G., & Nunes, R. (2013). Success and failure of grassroots innovations for addressing climate change: The case of the Transition Movement. Department of Geography and Environmental Science, University of Reading, United Kingdom b School

to the local community such as outside engineers or designers can be included in grassroots innovations under the condition of engaging the concept of grassroots innovation and the innovation process and putting the local knowledge and communities as the priority of the innovative outcomes. However, grassroots innovations must start from inside and then spread outside to external assistance and then become scaled up.³² Similar to any other process or approach, grassroots innovations has drivers and barriers. Barriers faced by this type of community-based innovation hinder its implementation and progress. For instance grassroots initiatives face participation issues since it usually depend on volunteers and social activists where low participation levels would limit the effectiveness of such an approach. The low levels of financial resources in the absence of government support, hinders the progress of the initiative and if the government supplies the initiative with financial support they would be short termed and faced with many constraints.

Political benefits and conflicts stand in front of the progress of this initiative. Therefore, a step should be taken before launching any grassroots innovation. Understanding, as much as possible, the internal factors and external elements that enhance or inhibit the success of such innovations is an essential first step.³³ In this context, “missed opportunities” or those initiatives that did not witness success should be further investigated in order to come up with reasons behind this failure. Traditions, economic and environmental factors could be barriers as well as enablers. For this, the survival of any initiative is a challenge. It is said that initiatives usually spend 90 percent of its time trying to survive rather than trying to develop.³⁴ Recognizing the appropriate technology, especially related to vulnerable communities, is another challenge.³⁵ Despite the above-mentioned challenges faced, grassroots innovations have several benefits such as the formation of a space for the development of new ideas and applications, testing new systems of provision, enabling people to express their socially developmental values and it leads to concrete achievements in the field of sustainability and social well-being.³⁶

Case	Honey Bee Network
Area of intervention	India
Key SDGs	SDG 1 – No poverty SDG 8 – Decent work and economic growth SDG 9 – Industry, innovation and infrastructure
Objectives	The honey Bee Network links grassroots innovators and targets all sectors related to the well-being of low-income groups. It has developed a big database joining different innovative activities and protecting property rights. It has connected informal innovators with formal institutions. The deprived are the innovators are recognized as such. They decide the conditions of use

of Real Estate and Planning, University of Reading, United Kingdom. Retrieved from:

http://centaur.reading.ac.uk/36095/1/manuscript_for%20CENTAUR.pdf

³² Smith, A., Fressoli, M., & Thomas, H. (2014). Grassroots innovation movements challenges and contributions. *Journal of Cleaner Production*, 63, 114-124.

³³ Feola, G., & Nunes, R. (2013). Success and failure of grassroots innovations for addressing climate change: The case of the Transition Movement. Department of Geography and Environmental Science, University of Reading, United Kingdom b School of Real Estate and Planning, University of Reading, United Kingdom. Retrieved from:

http://centaur.reading.ac.uk/36095/1/manuscript_for%20CENTAUR.pdf

³⁴ Seyfang, G., & Smith, A. (2007). Grassroots innovations for sustainable development: Towards a new research and policy agenda. *Environmental Politics*, Vol. 16, No. 4, 584 – 603. Retrieved from: http://base.socioeco.org/docs/seyfang_and_smith.pdf

³⁵ Smith, A., Fressoli, M., & Thomas, H. (2014). Grassroots innovation movements challenges and contributions. *Journal of Cleaner Production*, 63, 114-124.

³⁶ Foster, C., Heeks, R., & Nugroho, Y. (2014). *New models of inclusive innovation for development*. Retrieved from: <http://www.tandfonline.com/doi/abs/10.1080/2157930X.2014.928982?journalCode=riad20>

	<p>of their creation, as well as its eventual commercialization and scale-up. Every decision taken is based on their needs and capabilities.³⁷</p> <p>The Honey Bee Network started in 1989. It has realized that on ethical grounds, knowledge extraction from people, and dissemination among them, were non-sustainable, leading to knowledge asymmetry, whereby local knowledge was used without any acknowledgement of the input of local communities. The Honey Bee Network seeks to provide a platform for diffusing innovations produced in informal sector by local innovators. By closing this knowledge asymmetry, Honey Bee Network reinforces local innovators by reward sharing.</p> <p>The Honey Bee Network offers a range of activities such as scouting and documenting grassroots innovations, as local communities such as farmers have been relying on their ingenuity to solve their problems in a cost-efficient way.</p> <p>The network works as well to disseminate this knowledge. Techpedia, is an initiative with the purpose of linking the informal sector and grassroots innovators with young technology students across India. This platform includes local innovators, industry, academic institutions, and students with the purpose of fostering collaboration and co-creation in order to share knowledge, find solutions and scale them.</p> <p>Concretely, the network was able to support local innovators from impoverished areas of India to patent and commercialize over 30 innovations such as a cheap washing-machine that can be afforded by the poor; transforming a bicycle into an agricultural machine to weed the soil; or even small portable windmill to charge small devices.</p>
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Case 1 Honey Bee Network (India)

Social innovation

Social innovations are approaches that generate novel solutions or systems that are directly linked to a specific social need. Social innovations result in new and improved potentials and connections with a much efficient use of resources.³⁸ It is a vital factor among the solutions addressing SDG's³⁹ as they work on existing social, cultural, environmental, and economic challenges for the good of the community and environment. This is done by forming and spreading social value.⁴⁰ Therefore, social innovation is mainly about coming up with applicable ideas that become initiatives with a specific social benefit that increases social well-being. Since this innovation is built on social values, social cohesion and integration are essential factors. Social cohesion mainly depends on individual well-being. For instance, when equality

³⁷ Marine, S. (2016). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: <https://www.unescwa.org/sites/www.unescwa.org/files/events/files/souheil-marine.pdf>

³⁸ Davies, A., & Simon, J. (2013). The value and role of citizen engagement in social innovation. a deliverable of the project The theoretical, empirical and policy foundations for building social

³⁹ Mulgan, G., Tucker, S., Ali, R., & Sanders, B. (2007). Social innovation: what it is, why it matters and how it can be accelerated. Retrieved from: https://www.sbs.ox.ac.uk/sites/default/files/Skoll_Centre/Docs/Social%20Innovation%20-%20What%20it%20is%2C%20why%20it%20matters%20%26%20how%20it%20can%20be%20accelerated.pdf

⁴⁰ Combe, C., & Navia, F. (2014). *Social Innovation Case Studies*. Retrieved from: http://www.fomentosanbastian.eus/donostiainn/images/Services_proyectos/descargas/Innovate-Social-Innovation-Case-Studies.pdf

within community members is present, social cohesion and integration will automatically increase. Hence, the individual in every community should receive his rights to build a coherent community.

Because individual well-being is important, the presence of strong and reliable leaders with strong social networks who motivate and reward effective innovation, triggers the process and drives success. Moreover, the growth and spread of innovations is being greatly affected by technology.⁴¹ Social innovations are not limited to poor and marginalized communities⁴² but rather it is present when organizations and institutions fail to develop and therefore failure in the whole system becomes present. At this point social intervention is required through social innovations. Citizen engagement and public participation play a critical role in the implementation of social innovation. This is the basic idea of community-based innovation, because citizens have deep knowledge of the communities' challenges and potentials and therefore, enable an advanced understanding of the problems and a better innovative system. The challenge in this context is that the two concepts are abstract, social innovation and citizen engagement, based on behavior and preferences that are dynamic and subjective.⁴³ Therefore we should consider citizens innovation part of social innovation where the latter requires the engagement of citizens from the start until the end.

The critical stage in the social innovation and any innovation is in scaling the innovation to reach the greater number of the vulnerable population. Taking an innovative idea to scale necessitates an organized plan with developmental and social vision. Literature has extensively discussed the reasons behind the failure in scaling up good initiatives. Scaling up depends on two interconnected factors present:

1. An environment that offers financial support for the model to expand. Added to that, the presence of good governance and qualified human capital is essential. A particularly important capacity is being able to span different sectors.
2. Communication is important; social innovators need to attract the creativeness of the community's supporters through communication, rewards and sensible persistence. Reputation of involved institutions is vital in the spread of the innovation.⁴⁴

Crowd-sourcing innovation

Crowd-sourcing initiatives are a group of activities based on the concept of the public providing information to leaders and innovators. Similarly, crowd-funding is a specific case of crowd-sourcing where the crowd provides financial support in the field of innovation. Crowd-sourcing entails a broad range of activities and actions that are part of every type of community-based innovation.

Crowd-sourcing is defined as "the act of taking a function once performed by employees and outsourcing it to an undefined network of people in the form of open call". This definition is based on the idea that collective work and intelligence is much more effective than individual efforts. In short, crowd-sourcing occurs when the public, citizens and communities, provide information rather than depending on expert-

⁴¹ Mulgan, G., Tucker, S., Ali, R., & Sanders, B. (2007). Social innovation: what it is, why it matters and how it can be accelerated. Retrieved from: https://www.sbs.ox.ac.uk/sites/default/files/Skoll_Centre/Docs/Social%20Innovation%20-%20What%20it%20is%2C%20why%20it%20matters%20%26%20how%20it%20can%20be%20accelerated.pdf

⁴² Marine, S. (2016). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: https://www.unescwa.org/sites/www.unescwa.org/files/events/files/souheil-marine.pdf_1

⁴³ Mulgan, G., Tucker, S., Ali, R., & Sanders, B. (2007). Social innovation: what it is, why it matters and how it can be accelerated. Retrieved from: https://www.sbs.ox.ac.uk/sites/default/files/Skoll_Centre/Docs/Social%20Innovation%20-%20What%20it%20is%2C%20why%20it%20matters%20%26%20how%20it%20can%20be%20accelerated.pdf

⁴⁴ Mulgan, G., Tucker, S., Ali, R., & Sanders, B. (2007). Social innovation: what it is, why it matters and how it can be accelerated. Retrieved from: https://www.sbs.ox.ac.uk/sites/default/files/Skoll_Centre/Docs/Social%20Innovation%20-%20What%20it%20is%2C%20why%20it%20matters%20%26%20how%20it%20can%20be%20accelerated.pdf

based information. Co-creation, user innovation and open innovation are related to crowd-sourcing. Users and consumers are the targets of open and user innovation. These innovations depend on the information and solutions gathered from the public. Yet, user-innovation focuses on users and consumers and rather takes a more economic route than a social one. Due to the fact that information of this type is being provided by the public and not experts, accuracy and reliability are questioned. If procedures of discouraging false reporting are taken, this inhibits people's engagements creating a greater problem. Technology, in this context, is the human tool for motivating and even creating social change and raising awareness.⁴⁵

Case	Ushahidi/HarassMap
Area of intervention	Egypt
Key SDGs	SDG 5 Gender equality SDG 11 Sustainable cities and communities SDG 16 Peace, justice, and strong institutions
Objectives	<p>Ushahidi (testimony in Swahili) is non-profit technology company whose mission is to help people with limited access in hard to reach places as well as serve as a catalyst of an innovation ecosystem in East Africa and around the globe. Hence, Ushahidi creates technology to solve global problems.</p> <p>This platform has been used to organize responses to a wide range of events and not only crises. For instance, it has been used in the Mexican elections to report problems at surveying stations to the electoral commission. It has been used to gather information about harassment in Egypt and to report flooding in Australia and fires in Russia. It reveals the potential and power of crowd-sourcing to offer instant information that can be used to develop efficient solutions and interferences.⁴⁶</p> <p>This platform ensures that local voices are heard and reports can be generated during times where other means are unavailable. This ensures a steady response to crisis or access to information during events in regions and countries where information is unreliable.</p> <p>For instance, Ushahidi created a platform used in the aftermath of the earthquake that took place in Haiti in 2010. The aim was to receive the benefits of crowd-sourcing information, using a large group of people to report on a story, and facilitate the sharing of information in a struggling environment. It has now been scaled-up and applied in numerous crisis settings, Libya, Somalia, Syria and Afghanistan.</p> <p>In Egypt, a HarassMap was created with the purpose to engage the Egyptian society to create an environment where sexual harassment is not tolerated. Created in December 2010 by four women, the initiative was born as a response to the persistent problem of sexual harassment on the streets of Egypt where very few cases were denounced. Using Ushahidi's crowd-mapping system, it allows victims of sexual harassment to pinpoint the</p>

⁴⁵ Davies, A., & Simon, J. (2013). The value and role of citizen engagement in social innovation. a deliverable of the project. The theoretical, empirical and policy foundations for building social innovation.

⁴⁶ Davies, A., & Simon, J. (2013). The value and role of citizen engagement in social innovation. a deliverable of the project. The theoretical, empirical and policy foundations for building social innovation.

	<p>location of the incident on a Google Map and describe the assault anonymously. HarrassMap creates local neighborhood teams and trains volunteers who are responsible of building awareness and changing cultural sensibilities. Moreover work is done with local businesses, schools and universities to create safe areas.</p> <p>This is a great example of appropriation of technology showing how crowdsourcing and in this case crowd-mapping can be used by local teams and community-based organizations to tackle local problems.</p>
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Case 2 HarassMap/Ushahidi (Egypt)

Chapter 3 - Community-based innovation in context

The objective of this chapter is to highlight the importance of context for community-based innovation. We start by talking about the role of local culture whereby local conditions and values can either encourage or constrain social innovation. In the second section of this chapter, we take the case of the Arab region and discuss the challenges for improved social well-being and the role that technology plays.

The role of local culture

Culture is a comprehensive system of communications that integrates the technical and biological behavior of human beings with their verbal and nonverbal systems of communicative behavior. Culture pushes people to view and assess social interactions in a different way.⁴⁷ Therefore, the cultures and values of people and the knowledge and innovations of local communities are fundamental cultural resources, essential for contemporary problem solving.⁴⁸ There is increasing evidence suggesting that the reasons behind today's environmental problems can be traced back, directly or indirectly, to the local level, choices, values and behaviors of local communities.⁴⁹ Any alteration in a specific community should take into account its cultural values and base any intervention on them. This not only to avoid clash or cultural shock, but also due to the fact that local communities and their cultural values have the greatest knowledge regarding the needs of the community and the country. Innovation is accompanied with change and in order to handle and adapt to change; people rely on basic aspects of cultural values, traditional knowledge, and usual institutions for assistance and support.⁵⁰ From this, innovation must be based on the unique values of each community and aimed to preserve them. Research conducted in the field of innovation has shown that there is a strong relationship between innovation and culture where culture is said to have a deep influence on the innovative ability of a community.⁵¹ Therefore, culture is a creative source and enabler for community-based innovation. Any step towards innovations or change should be preceded by cultural investigation. This harnesses the influences of diversity and democracy as enablers for innovation to move beyond and reach its goals.⁵² A community's values provide communal direction to the process of innovation. It is to be noted that although research has shown that culture triggers innovation, in other instances it also acts as a barrier for innovation development since some beliefs can obstruct the process of development and implementation of new ideas.⁵³

Community readiness

Lack of grounding in the community may be a major reason why innovation programs do not lead to the preferred outcomes. Three readiness factors have been identified:

1. Informing the community is essential when the change is going to be community-wide and community-based. There is a necessity for the presence of willingness to be open to change

⁴⁷ Fathima, N. (2015). *Analysis of innovation entrepreneurship in Arab world*. Carnegie Mellon University. Retrieved from <https://pdfs.semanticscholar.org/e66f/16e5c388f0e168beb34e47d3f0997eb46bee.pdf>

⁴⁸ UNESCO. (2016). *Indigenous and local knowledge(s) and science(s) for sustainable development*. Retrieved from: <http://unesdoc.unesco.org/images/0024/002461/246104E.pdf>

⁴⁹ Ono, J., Yoshimura, S., Yashiro, M., & Velasquez, J. (2005). *Innovative communities: people-centered approaches to environmental management in the Asia-Pacific region*. Retrieved from: <http://archive.unu.edu/unupress/sample-chapters/InnovativeCommunities.pdf>

⁵⁰ UNESCO. (2016). *Indigenous and local knowledge(s) and science(s) for sustainable development*. Retrieved from: <http://unesdoc.unesco.org/images/0024/002461/246104E.pdf>

⁵¹ Fathima, N. (2015). *Analysis of innovation entrepreneurship in Arab world*. Carnegie Mellon University. Retrieved from <https://pdfs.semanticscholar.org/e66f/16e5c388f0e168beb34e47d3f0997eb46bee.pdf>

⁵² UNESCO. (2016). *Indigenous and local knowledge(s) and science(s) for sustainable development*. Retrieved from: <http://unesdoc.unesco.org/images/0024/002461/246104E.pdf>

⁵³ Fathima, N. (2015). *Analysis of innovation entrepreneurship in Arab world*. Carnegie Mellon University. Retrieved from <https://pdfs.semanticscholar.org/e66f/16e5c388f0e168beb34e47d3f0997eb46bee.pdf>

within the community. Since change is community-based, then leaders of any change are preferred to be from the community in order for them to work for the community. Therefore, in order to ensure success and long-term impact of any initiative, those leaders need to be supported.

2. Integration and belonging are essential factors that community members and leaders should have towards the innovative initiative to avoid distraction and to ensure long term commitment to the process. Since results will not appear in the short-term and to have a positive social impact it is a long-term investment, it is imperative to ensure appropriation and local ownership of the initiatives. Therefore, community engagement must be ensured at the beginning of the project and throughout the process.
3. In community-based initiatives, networking is a key to success. Therefore, identifying and amplifying local networks within a community is considered essential for long-term success of community change. Building and reinforcing existing networks is important to the successful implementation of the vision, goals, and projects. Networks are a set of interactions between different stakeholders within the community across sectors. In some cases the creation of new networks is required.⁵⁴

A lot has been written about how culture can either encourage or restrain innovation. Encouragement involves the integration of leaders of innovations within the community and with community members and visible care towards successful change. Innovation depends on the spirit or ethos especially when this innovation is targeted towards specific communities or vulnerable group members. It depends on the imaginative style that tells people that innovation matters intrinsically. Yet, innovation does not happen with a click of button, it is a long term process that will face obstacles. Hence, a mitigation plan needs to be in place to handle obstacles.⁵⁵ Community-based innovation needs commitment and embracement of all specificities and uniqueness of a community and needs to start form the problems of the community for it to succeed.

Innovation in times of crisis

When it comes to humanitarian crisis, and more particularly with internally displaced populations (IDP) or refugees, we see multiple cases of bottom-up innovations. In such a context, we are seeing a shift from the traditional humanitarian aid, towards initiatives such as cash-based as it empowers and gives choice to the vulnerable populations. More participatory approaches are being used to involve stakeholders and beneficiaries of aid in determining their own priorities and coming up with solutions that are context specific. In the past decade, given this paradigm shift in tackling humanitarian crisis in dealing with beneficiaries of aid, a number of community-based innovations have surged aiming to tackle problems within camp settings, but as well for host communities and for refugees and IDPs in urban settings. For instance, in Nakivale settlement in Uganda, a refugee settlement established in 1960 and hosting around 60 000 persons, an informal refugee run energy supply system has been put in place. This includes complete infrastructure, electricity grid, generators, batteries, solar planes, phone charging as well as many businesses that benefit from this community-based innovation.⁵⁶ In developing countries, initiatives have been created by local organizations and at the local level to support refugee integration into their new environment. StartupRefugee is such a community-based initiative in Finland, welcoming refugees and putting in place an array of services to support their workplace integration by supporting newcomers' ideas and transforming them into successful start-ups. This is done by matching refugees with professionals for mentoring; supporting the development of their business ideas; providing networking

⁵⁴ Walzer, N., & Cordes., S. (2012). *Overview of innovative community change programs*, *Community Development*, 43:1, 2-11, DOI: 10.1080/15575330.2011.653979

⁵⁵ United Nations (2008). *Innovation for Sustainable Development: Local Case Studies from Africa*. Retrieved from <https://sustainabledevelopment.un.org/content/documents/publication.pdf>

⁵⁶ Beck, L. (2014). *Nakivale fact sheet*. UNHCR Sub Office Mbarara

opportunities as well as support in finding funding.⁵⁷ In Germany, where 51000 IT jobs are available for grab, Redi-School of Digital Integration was created in 2015 to accelerate the refugees' integration into society. The school offers online and onsite training for newcomers seeking asylum in Germany, creating a win-win situation.⁵⁸ In Jordan, UNICEF supports Zaatari Innovation Lab, created to mobilize youth and women in the refugee camp to innovate in order to serve their community.

Creative spaces

Technological and institutional changes have led to new environments that foster entrepreneurial activity. Since the mid-2000s a large number of creative community spaces have been created. These spaces are becoming more and more centers of technological innovation and entrepreneurial spirit, becoming new forms of incubators and accelerators for entrepreneurial activity. Creative social spaces called hackerspace, hacklab, or fablab are emerging around the world. These different names are used to describe a community space equipped with technological tools such as computers, 3D printers, or numerically controlled machines, where people can meet to engage in creative projects.⁵⁹ Many of those creative spaces have been created with the main purpose of tackling societal problems, as their mission is to present social innovations aligned with the SDGs. Impact Hub is one of the biggest such creative spaces. What started in 2005 in London as one community of change makers has expanded to include over 15 000 individuals in 85 different physical locations worldwide. This networks aims to “generate and advance innovative approaches to both local and global social and environmental challenges”.⁶⁰ In the Arab region, Impact Hub has two physical spaces in Dubai and Khartoum. However, other creative spaces exist in the region, for instance Elevate, a collaboration between AltCity and UNICEF in Lebanon; Dare Inc., in Morocco; Makani in Jordan, as well as programs such as Safir Lab, a laboratory and a catalyst for social innovation targeting youth in Morocco, Algeria, Tunisia, Yemen, Libya, Egypt, Palestine, Lebanon and Jordan.

The Arab region

The main concern in most of the Arab region is the lag in development compared to other parts of the world, with the absence of scaled up innovations.⁶¹ The idea of innovation that is translated in systems and actions does exist in the Arab region, yet it is not exploited to its full capacity.⁶² This weakness could be traced back to various reasons, from which is the economic structure of the Arab countries that does not systematically promote space for innovation and development, cultural values, availability and equal distribution of resources, governance and more. What is significant is that the current system of innovation in the Arab region is predicted to have serious effects on the long run, especially of the availability of scarce resources and therefore the importance of sustainability. Therefore, change is required in order to enhance innovation and reach social well-being in all the Arab countries.

Until recently, the Arab world has been living in scientific and technological stagnation since the beginning of industrialization in Europe. Since then, most of the countries in the region did not work on catching up and mediating the losses, unlike Japan that was able to catch up and lead, knowing that the Arab world was in similar situation as Japan in the nineteenth century.⁶³ Absence of the idea of self-

⁵⁷StartupRefugees. Retrieved from: <https://startuprefugees.com>

⁵⁸ReDI School. Retrieved from: <https://www.redi-school.org>

⁵⁹Kostakis, V., Niaros, V., & Giotitsas, C. (2014). Production and governance in hackerspaces: A manifestation of Commons-based peer production in the physical realm? *International Journal of Cultural Studies*

⁶⁰Impact Hub. Retrieved from: <https://washington.impacthub.net/our-story-2/>

⁶¹ Marine, S. (2016). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: <https://www.unescwa.org/sites/www.unescwa.org/files/events/files/souheil-marine.pdf>

⁶² Nour, M., & Satti, S. (2016). *Regional systems of innovation in the Arab region*. Retrieved from: <http://www.palgrave.com/gb/book/9781137462992>

⁶³ Marine, S. (2016). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: <https://www.unescwa.org/sites/www.unescwa.org/files/events/files/souheil-marine.pdf>

dependence and self-satisfaction⁶⁴ within each country has led to high dependence on importing goods and services and even ideas instead of utilizing local human and physical resources to innovate and develop. Governance is another reason, as there is a lack of transparency and accountability. Moreover, significant population growth has been occurring for the past fifty years, where population grew from 106.1 million 1965 to 388.1 million by 2015.⁶⁵ This led to high urbanization, congested cities, poor public infrastructure from health services and more. Urbanization rate in the Arab world is one of the highest, where 56 percent of the population is located in cities.⁶⁶ This urbanization could be traced back to many reasons, mostly centralization of institutions and services, absence of rural-urban communication and planning, poor governance, but mainly unemployment. Youth in Arab countries head to cities due to unemployment in their communities and cities. Despite this internal migration to cities, youth unemployment in the Arab region is among the highest, with 23.2 percent of youth unemployment compared to 13.9 percent globally.⁶⁷ If the current situation does not change, these numbers are predicted to double by 2050 putting higher pressure on the already fragile infrastructure and services.⁶⁸

On a positive note, some Arab countries took the road of development and were able to set change. Ahead of all Arab countries, Tunisia⁶⁹ was able to eliminate slums, preserve historic areas, and provide adequate services to underprivileged citizens. Similarly, Morocco decreased the number of slums by about 65 percent between 1990 and 2010.⁷⁰ Today, we are witnessing changes in some cultural beliefs within Arab regions.⁷¹ Civil societies are gaining more power and are working on development initiatives addressing all SDGs through utilizing technology, and tackling gender gaps,⁷² just to mention a few.

Penetration of technology in the Arab region

Technology is considered a major factor in the process of societal transformation and advancement. This is mainly due to the increase in efficiency, connectivity and access to resources and services.⁷³ Therefore, as a tool, technology is said to aid in achieving development and sustainability. The challenge for any community or region is the approach towards technology and technological advances. In the Arab region, technology is required in order to tackle poverty, health insecurities, urbanization, conflict and violence and other issues leading to sustainability and social-well-being. For the past few years, Arab countries had continuous growth in Internet users compared to the rest of the world. The mobile telephone market has become a phenomenon market, driven by competition, multiple sellers provided lower costs and improved performance to attract new customers.⁷⁴ However, technology alone cannot be effective. Local

⁶⁴ Marine, S. (2016). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: <https://www.unescwa.org/sites/www.unescwa.org/files/events/files/souheil-marine.pdf>

⁶⁵ Marine, S. (2016). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: <https://www.unescwa.org/sites/www.unescwa.org/files/events/files/souheil-marine.pdf>

⁶⁶ ESCWA. (2015). *Smart cities: regional perspectives*. Retrieved from: <https://www.worldgovernmentsummit.org/api/publications/document/d1d75ec4-e97c-6578-b2f8-ff0000a7ddb6>

⁶⁷ ESCWA. (2015). *Smart cities: regional perspectives*. Retrieved from: <https://www.worldgovernmentsummit.org/api/publications/document/d1d75ec4-e97c-6578-b2f8-ff0000a7ddb6>

⁶⁸ ESCWA. (2015). *Smart cities: regional perspectives*. Retrieved from: <https://www.worldgovernmentsummit.org/api/publications/document/d1d75ec4-e97c-6578-b2f8-ff0000a7ddb6>

⁶⁹ ESCWA. (2015). *Smart cities: regional perspectives*. Retrieved from: <https://www.worldgovernmentsummit.org/api/publications/document/d1d75ec4-e97c-6578-b2f8-ff0000a7ddb6>

⁷⁰ ESCWA. (2015). *Smart cities: regional perspectives*. Retrieved from: <https://www.worldgovernmentsummit.org/api/publications/document/d1d75ec4-e97c-6578-b2f8-ff0000a7ddb6>

⁷¹ Nour, M., & Satti, S. (2016). *Regional systems of innovation in the Arab region*. Retrieved from: <http://www.palgrave.com/gb/book/9781137462992>

⁷² Marine, S. (2016). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: <https://www.unescwa.org/sites/www.unescwa.org/files/events/files/souheil-marine>.

⁷³⁻¹³¹⁻¹³² ESCWA. (2015). Role of technology in sustainable development in the Arab region. Retrieved from: <http://css.escwa.org.lb/SDPD/3572/5-Technology.pdf>

⁷⁴ Dutta, S., Shalhoub, Z., & Samuels, G. (2006). *Promoting technology and innovation: Recommendations to improve Arab ICT competitiveness*. Retrieved from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.175.1115&rep=rep1&type=pdf>

knowledge and culture can work on achieving local appropriation of technologies.⁷⁵ Such technologies are people-centered developments that consider humans in their environment.

When looking at the penetration of technology in the Arab region, we realize how heterogeneous this part of the world is. We should be very careful when analyzing and setting recommendations as cultural, developmental and governance differences should be taken into account. For instance, in terms of ICT development index (IDI) Bahrain ranks 29th globally, Lebanon 66th while Mauritania 151st and Yemen 155th. As for internet access, while 5.48 percent of households have access to internet in Yemen, it reaches about 95 percent Qatar and UAE. These indicators correlate with most SDG goals. This goes to show how technology as a tool can be used for achieving better living conditions such as education, health and reduced poverty.

Table 1 ICT Development Index (IDI)

ICT Development Index (IDI) in Arab Countries for 2016							
Countries*	IDI Rank	IDI value	Mobile-telephone subscription per 100 inhabitants	% of households with computers	% of households with internet access	% of individuals using the internet	Years of schooling (Mean)
Algeria	103	4.40	113.03	37.02	31.88	38.20	7.61
Bahrain	29	7.46	185.26	94.80	88.71	93.48	9.42
Egypt	100	4.44	110.99	50.79	41.84	35.90	6.55
Jordan	85	5.06	179.43	47.00	75.90	53.40	9.91
Kuwait	53	6.54	231.76	89.00	80.46	82.08	7.21
Lebanon	66	5.93	87.07	81.00	69.00	74.00	7.92
Mauritania	151	2.12	89.32	4.70	15.60	15.20	3.77
Morocco	96	4.60	126.87	54.80	66.50	57.08	4.37
Oman	59	6.27	159.86	87.54	83.95	74.17	8.00
Qatar	46	6.90	153.59	88.33	95.82	92.88	9.76
Saudi Arabia	45	6.90	176.59	67.00	94.00	69.62	8.70
Sudan	139	2.60	70.53	17.94	33.50	26.61	3.14
Syria	122	3.32	62.45	49.90	42.27	29.98	6.25
Tunisia	95	4.83	129.93	38.70	36.90	48.52	6.84
United Arab Emirates	38	7.11	187.35	89.30	95.40	91.24	9.49
Yemen	155	2.02	67.98	6.54	5.48	25.10	2.60
Arab States	-	4.81	110.50	41.90	41.90	39.00	6.90
Europe	-	7.35	119.80	79.80	79.80	76.30	11.30

*Results for Iraq, Libya and Palestine are not available
Source: ITU Data; <http://www.itu.int/net4/ITU-D/idi/2016/?#idi2016rank-tab>

Chapter 4 - SDGs and community-based innovation

Sustainable development goals (SDGs) are 17 set of goals, targets and indicators set to be achieved by 2030. In order to achieve the SDGs; countries must strive toward “efficient, accountable, effective, and

transparent public administration, at both the national and international levels”.⁷⁶ Governments and officials need to ensure citizen engagement to effectively achieve the SDGs. Given their intrinsic relatedness to community-based innovation, we will explicitly focus on five SDGs in this report, i.e. goals 1, 3, 5, 11, and 16. It is evident that achieving the desired targets of the SDGs will necessitate changes in attitudes and behaviors as well as education and innovation. Foremost, there will also be a crucial role to be played by technology to generate sustainable value for communities.⁷⁷

Goal 1: No poverty

According to the World Bank, social insecurity impacts about 80 per cent of the global population and 1.4 billion people live in poverty, i.e. less than \$1.25 a day.⁷⁸ SDG goal 1 is a call to end poverty in all its forms by 2030, including extreme poverty. Under the umbrella of eradicating poverty, a number of topics are tackled as forms and antecedents of poverty are very diverse. These topics include the eradication of extreme poverty, decrease in the number of people living in poverty, and made defenseless through experiencing many poverty dimensions, application of social protection systems in rural and urban areas for the poor and vulnerable, guarantee equal access to economic and natural resources, production of policy frameworks based on pro-poor, gender sensitive development strategies to support increased investment in poverty suppression actions.⁷⁹

Innovation can be a driving force for poverty reduction.⁸⁰ This is done through engaging with local communities as it is a critical factor to eradicate poverty. Therefore, there is a necessity for innovative interventions based on community needs and resources in order to reach zero poverty by 2030. Regarding poverty, the Arab region witnessed an increase in poverty since 2010 compared to other regions. For instance, in 2015, 18.2 percent of the population lived in multidimensional poverty. Poverty in the region increased from 22.7 percent in 1990 to 23.4 percent in 2011 based on national poverty lines. This increase could be traced back to the ongoing violent conflicts taking place in a number of Arab countries where these ongoing conflicts are causing significant economic damage, displacement, and spillover effects on nearby countries. Today, national poverty rates have reached disturbing levels at 83 percent in Syria, 54 percent in Yemen, 47 percent in Sudan, 41 percent in Djibouti, 31 percent in Mauritania, and 28 percent in Egypt.⁸¹ Compared to 1990, the year 2012 has witnessed increase in the incidence of poverty in the majority of the parts of the Arab world.

Although the numbers related to poverty in the countries in conflict or instability in the Arab region are deteriorating, Tunisia was able to cut its poverty incidence by the half in a decade, from 32.4 percent in 2000 to 15.5 percent in 2010 and 15.4 percent in 2012. Since 2011, the conflicts in the Arab region have incurred losses in the form of underperformance in GDP of about \$613.8 billion between until 2015,

⁷⁶ United Nations. (2005). *Innovation for Sustainable Development: Local Case Studies from Africa*. Retrieved from <https://sustainabledevelopment.un.org/content/documents/publication.pdf>

⁷⁷ United Nations. (2016). *The sustainable development goals*. Retrieved from: <http://www.un.org.lb/Library/Assets/The-Sustainable-Development-Goals-Report-2016-Global.pdf>

⁷⁸ UNDP. (2011). *Sharing innovative experiences; Successful social protection floor experiences*. Retrieved from: http://www.ilo.org/wcmsp5/groups/public/---ed_protect/---soc_sec/documents/publication/wcms_sec_soc_20840.pdf

⁷⁹ Lee, P., & Pollitzer, E. (2016). *The Role of Gender-based Innovations for the UN Sustainable Development Goals Toward 2030: Better Science and Technology for All*. Retrieved from: www.un.org.lb/Library/.../The-Sustainable-Development-Goals-Report-2016-Global.pdf

⁸⁰ Linna, P. (2010). *Community-level entrepreneurial activities: Case study from rural Kenya*. International Journal of Business and Public Management (ISSN: 2223-6244) Vol. 1(1): 8-15. Retrieved from: <https://www.mku.ac.ke/research/images/journals/vol%201/Community-Level%20Entrepreneurial%20Activities-%20Case%20Study%20from%20Rural%20Kenya%20final.pdf>

⁸¹ Union of Arab Banks. (2016). *Multifaceted poverty in the Arab Region amid conflict and displacement*.

equivalent to 6 percent of GDP. Additionally, the aggregate fiscal deficit incurred reached \$243.1 billion. With the decreasing oil prices, social and political instabilities, human displacements, and extremist terrorism, poverty in the region, is increasing and is predicted to keep on increasing to reach alarming levels in several Arab countries.⁸² This is very problematic in the Arab region, since a number of countries are in war today, Syria, Yemen, and Libya, while other Arab countries live in daily conflicts such as Iraq. Therefore, conflicts in the region pose a great challenge to the eradication of poverty in all its forms as SDG1 suggests.⁸³

Living in poverty pushes people to take other routes those of violence and of extremism threatening the security and safety of communities. Poverty is said to be a cause of conflicts and violence in countries.⁸⁴

Case	Malô
Area of intervention	Mali
Key SDGs	SDG 1 – No poverty SDG 2 – Zero hunger SDG 12 – Responsible consumption and production
Objectives	<p>Malô, a social enterprise founded in Mali, was created to tackle two key problems faced by the community, i.e. malnutrition and inefficiency in rice production.</p> <p>When global prices of rice tripled in 2008, riots erupted from India to the West Indies. The World Bank estimated that a 100 million people fell back into poverty given rice's key position in total household budget expenditures. Farmers in West Africa produce approximately 8 million metric tons of milled rice and import over 7 million metric tons per year. Farmers are caught in a vicious circle. The lack of proper storage facilities, efficient milling machines, packaging material, and effective marketing and distribution strategies leads to lost revenue and low incomes.</p> <p>On one hand, in Mali, the World Bank estimates economic losses due to the detrimental effects of iron deficiency anemia on cognitive function and productivity alone at \$400 million per year. 83 percent of Malian children under 5 and 61 percent of non-pregnant women are anemic. Amongst pregnant women, the figure is 73 percent. Countries where white rice is the main staple food face particular challenges due to the fact that most of the nutrients contained in the crop are removed during processing. Households who cannot afford to pair rice with vegetables, fish, or protein are especially at risk.</p> <p>On the other hand, rice production is inefficient. Poor storage increases the risks of the rice being contaminated with aflatoxin; inefficient milling as 80 percent of rice grown in Mali, is milled using inefficient, diesel-powered mobile hullers. They have an average yield rate of just 55 percent, are loud, polluting, and the physical quality of the rice that emerges is poor. Finally, market access is problematic as farmers struggle to find buyers willing to pay</p>

⁸² Union of Arab Banks. (2016). *Multifaceted poverty in the Arab Region amid conflict and displacement*.

⁸³ Ghafar, A., & Masri, F. (2016). *The persistence of poverty in the Arab world*. Retrieved from: <http://www.aljazeera.com/indepth/opinion/2016/02/persistence-poverty-arab-world-160228072928685.html>

⁸⁴ Timmerman, M. (2014). *Poverty and conflict in the Middle East*. Retrieved from: <http://www.atlanticcouncil.org/blogs/menasource/poverty-and-conflict-in-the-middle-east>

	<p>fair prices during the harvesting period. Some farmers choose sit on their harvests until prices rise 5-6 months after harvest but such a strategy is risky.</p> <p>In order to respond to these challenges, Malô works with local farmers to enhance the process and fortify rice with nutrients. Malô stores, processes, and enriches the paddy rice and supplies families, relief agencies, and school meals programs with fortified rice. To enrich soils, Malô returns the main by-product (rice husk), transformed into biochar fertilizer, to farmers' cooperatives at discounted prices. The end result is great tasting rice with similar features as local rice; need-based micronutrient customization; branded and tamper proof packaged rice according to international norms, and fortified rice free of genetically modified organisms.⁸⁵</p>
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Case 3Malô (Mali)

Goal 3: Good health and well-being

Goal 3 on the 2030 agenda, targets health and aims to sustain a healthy life for all human beings at all ages. Putting an end to all communicable diseases, reducing non-communicable diseases, ensuring fair and equal health access to everyone from affordable medicine to regular vaccination, are some targets of this SDG. Regarding the global level of maternal and child health, the world has witnessed improvement, where the ratio of maternal mortality and the under 5 children mortality rate have declined, between 1990 and 2015, by 44 percent and 50 percent respectively. Yet, the numbers indicated that about 5.9 million children under 5 have died in 2015 due to avoidable diseases which indicate that health services are not penetrating in the best possible way.⁸⁶ Moreover, we are witnessing ongoing alarming health trends such as the obesity wave, the occurrence of certain chronic diseases or increasing fiscal pressures on our health-care systems. This requires combined efforts in order to start to change the way health is looked at and dealt with.

Both the developed and developing worlds are predicted to face growing health challenges in the near future.⁸⁷ Health is a major factor that indicates the well-being of a community or society. A healthy community can be productive, efficient, and sustainable. Therefore, ensuring healthy lives and healthy environment promotes for the well-being of communities. As it is obvious, poverty and health are interconnected, where poverty leads to living in unhealthy contaminated areas with no water sanitation, malnutrition, and low immunity. This all leads to the spread of diseases that become community-wide. As health is very context specific, interventions must be as well. Hence, given the institutional, social, cultural, and technological specificities of different groups within a region, community-based health interventions are increasingly emerging as they target community specific problems.

Arab countries have recorded some significant advances regarding healthcare. This has been reflected in the increase in the life expectancy at birth from 51 to 71 years in the period between 1960 and 2014. However, many Arab countries still lag behind in health care. This is said to be due to political, social and economic injustice.⁸⁸

⁸⁵ Malo, retrieved from: www.malo.ml

⁸⁶ PwC. (2016). *Navigating the SDGs: a business guide to engaging with the UN Global Goals*. Retrieved from: <https://www.pwc.com/gx/en/sustainability/publications/PwC-sdg-guide.pdf>

⁸⁷ PwC. (2016). *Navigating the SDGs: a business guide to engaging with the UN Global Goals*. Retrieved from: <https://www.pwc.com/gx/en/sustainability/publications/PwC-sdg-guide.pdf>

⁸⁸ Ghafar, A., & Masri, F. (2016). *The persistence of poverty in the Arab world*. Retrieved from: <http://www.aljazeera.com/indepth/opinion/2016/02/persistence-poverty-arab-world-160228072928685.html>

Table 2 Infant mortality rate and life expectancy.

Country	Infant mortality rate (per 1000 live Births)		Life Expectancy at Birth (years)	
	2009	2015	2009	2014
Algeria	24	22	74	75
Comoros	65	55	61	63
Djibouti	64	54	60	62
Egypt	25	20	70	71
Iraq	31	27	68	69
Jordan	18	15	73	74
Lebanon	9	7	78	79
Libya	15	11	72	72
Mauritania	71	65	62	63
Morocco	30	24	72	74
Palestine	21	18	73	73
Somalia	100	84	54	55
Sudan	55	48	62	63
Tunisia	16	12	74	74
Yemen	45	34	62	64
Arab world	33	28	70	71
World	39	32	70	71
OECD	7	6	79	80

Non-communicable diseases (NCD) have become the concern of all countries and especially developing ones since they are a major cause of mortality leading to more than 50 per cent of deaths.⁸⁹ Knowing that there is an absence in combating the risk factors behind these NCDs such as tobacco, the Arab region is going to face an increase in NCD deaths.⁹⁰ Again this is due to poor political and socioeconomic development choices. For developing countries and those in conflict, there is a “double burden”, where they face malnutrition and infectious diseases added to low health services. What is significant is that the Arab region has the largest number of refugees. These underprivileged refugees fleeing from war settle in already poor hosting communities increasing the severity of the health situation. Funding for public health and health systems is insufficient⁹¹ in low- and middle-income countries, and clearly insufficient to meet basic population needs. The main weakness of the Arab region falls in its resources,⁹² both in terms of physical and human capital. The human capital required for healthcare innovation is relatively limited with low density of physicians, nurses, and midwives.⁹³ Additionally, there is not enough motivation for research and development in the field of health in low-income countries. Therefore, the region has to put a plan for the post-conflict period in affected countries. For hosting communities, health care services need to be enhanced and developed. Community-based initiatives tackles the problem at its roots and proposes sustainable solutions that are adapted to the local culture.

⁸⁹ Chivot, E. (2013). *Innovation for prevention and health*. Retrieved from:

https://hcss.nl/sites/default/files/files/reports/Critical_issues_in_health_care_-_Prevention.pdf

⁹⁰ Jabour, S. (2013). *Public health in the Arab world*. Retrieved from: <https://link.springer.com/article/10.1057/jphp.2013.2>

⁹¹ Jabour, S. (2013). *Public health in the Arab world*. Retrieved from: <https://link.springer.com/article/10.1057/jphp.2013.2>

⁹² Instead. (2015). *The healthcare sector in the UAE*. Retrieved from: https://centres.insead.edu/innovation-policy/publications/documents/HealthcareBrief_000.pdf

⁹³ Jabour, S. (2013). *Public health in the Arab world*. Retrieved from: <https://link.springer.com/article/10.1057/jphp.2013.2>

Case	Microcare
Area of intervention	Uganda
Key SDGs	SDG 3 – Good health and well-being SDG 10 – Reduced inequalities
Objectives	<p>Microcare is a micro-insurance created out of a Community Health Financing Micro-Insurance initiative in Uganda and has grown into the largest provider of group health insurance in Uganda. It services both formal and informal sectors and operates in urban and rural areas. Microcare provides affordable health insurance, including comprehensive information technology (IT) systems and controls. It has developed a well-calibrated range of health services, integrating malaria and HIV treatment in its coverage. Every plan is negotiated with the customer community, with premium adjusted to the service required. In the design phase, Microcare discussed with the local community the premium members would be able to afford, the level of services they expected and the group structures required to avoid adverse selection. This consultative process has continued with community schemes, particularly where the communities are organized into traditional burial societies.</p> <p>Microcare has efficient measures to reduce fraud, such as fingerprints with electronic recognition, allowing it to keep annual fees per person at \$90–\$250 for formal sector groups, \$10 for rural informal sector groups, and \$25–\$35 for urban informal sector groups. In addition, Microcare has a high-capacity information technology system to support its operations: photosmart ID cards with biometrics capabilities, a robust Oracle database, data connectivity through VSAT and GPRS (GSM), and real-time claims processing through a unique networked hospital check-in desk system. Overall, this community-based health financing approach allows vulnerable populations to get access to insurance through the pooling of resources.⁹⁴</p>

Case 4 Microcare (Uganda)

Goal 5: Gender equality

Gender equality is defined as “the equal enjoyment by women and men of socially-valued goods, opportunities, resources and rewards, a state which can result from gender empowerment”.⁹⁵ Gender equality is a significant and essential part of every single SDG. Despite all the advances that the world is witnessing, gender inequality, discrimination and violence is still prevalent in all countries and communities. Equal access to education, having access to adequate health care, providing opportunities for decent work, and representation in political and economic decision-making processes are important factors leading to sustainable economies to the benefit of society at large. Due to the significance and importance of gender equality, SDG 5 calls for the achievement of gender equality and empowerment of all women and girls. What differentiates this SDG from the others is that it is the most one linked to cultural and societal ideologies and beliefs. From this point comes the difficulty of change and implementation in communities.

⁹⁴ United Nations. (2008). *Innovation for Sustainable Development: Local Case Studies from Africa*. Retrieved from <https://sustainabledevelopment.un.org/content/documents/publication.pdf>

⁹⁵ Lee, P., & Pollitzer, E. (2016). *The Role of Gender-based Innovations for the UN Sustainable Development Goals Toward 2030: Better Science and Technology for All*. Retrieved from: www.un.org/ib/Library/.../The-Sustainable-Development-Goals-Report-2016-Global

It is estimated that by 2025, women participating in the workforce globally will reach 40 percent- as it will represent 250 million additional individuals entering the workforce.⁹⁶ This will change the workforce scenery as it will have a significant economic impact across both developing and developed nations. However, to achieve this, we must give equal opportunities to women and change the setting of the economic world by ensuring access to social protection, provide new and flexible schemes for reproductive health and reproductive rights; enabling technologies; and enforcing legislation on gender equality and empowerment. Moreover barriers to gender equality need to be eliminated. This is done by ending all forms of gender discrimination; enforcing laws and eliminating violence against women; empowering youth and young girls particularly by eliminating harmful practices, such as early marriage; ensuring women's full and effective participation and equal opportunities for leadership by tackling issues such as glass ceiling, be it in public or private spheres; reforming public and private systems to give women rights to economic resources, such as ownership and control over land and access to financial services; and empowerment of women through education and access to technology.⁹⁷

More than 60 percent of the Arab population is under the age of 30.⁹⁸ These young women and men, although considered the greatest capital of the Arab region, face many difficulties such as unemployment. However, women in the Arab world face more intense difficulties than men due to the gender inequality present in the region. Within the majority of Arab states, women are still lagging behind in reaching equal employment opportunities. Although progress has been witnessed in female employment where in Saudi Arabia, 21 percent of women had entered the labor force as of the year 2016.⁹⁹ These numbers still lag behind when compared to other countries. The following graph shows female labor force participation in the MENA region in 2016.

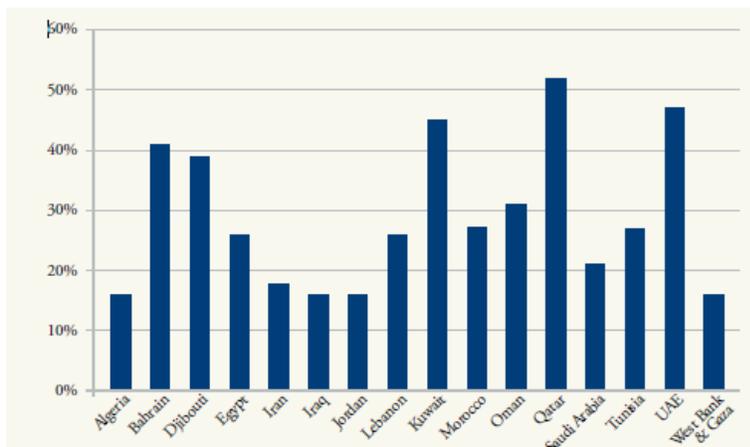


Figure 1 Female labor force participation. Momani (2016)¹⁰⁰

⁹⁶ UNDP. (2016). *Advanced gender equality and women's empowerment*. Retrieved from: <http://www.undp.org/content/dam/undp/library/innovation/Advance%20Gender%20Equality%20%26%20Womens%20Empowerment.pdf>

⁹⁷ PwC. (2016). *Navigating the SDGs: a business guide to engaging with the UN Global Goals*. Retrieved from: <https://www.pwc.com/gx/en/sustainability/publications/PwC-sdg-guide.pdf>

⁹⁸ UNDP. (2016). *Advanced gender equality and women's empowerment*. Retrieved from: <http://www.undp.org/content/dam/undp/library/innovation/Advance%20Gender%20Equality%20%26%20Womens%20Empowerment.pdf>

⁹⁹ Momani, B. (2016). *Equality and the economy: why the Arab should employ more women*. Retrieved from: https://www.brookings.edu/wp-content/uploads/2016/12/bdc_20161207_equality_in_me_en.pdf

¹⁰⁰ Momani, B. (2016). *Equality and the economy: why the Arab should employ more women*. Retrieved from: https://www.brookings.edu/wp-content/uploads/2016/12/bdc_20161207_equality_in_me_en.pdf

Only 25.2 percent of the women in Middle East and North Africa are in the labor force compared to 50 percent in other developing countries.¹⁰¹ It is estimated that women participation in the job market in the MENA region are three times lower than the average in other developing countries. If the women enter the labor force, they are faced with discrimination, lower wages given to women for equal work done or positions taken. For instance, the wage gap between women and men has reached 22 percent.¹⁰² Cultural barriers might be the most obvious cause of this inequality, despite the fact that full employment of women would increase household income by 25 percent.¹⁰³ Female income and welfare yields a positive development effect on reducing poverty and improvements in health indicators. This is because educated, employed women are more likely to have fewer and healthier children accompanied with higher household earnings and savings.¹⁰⁴ Lower employment rates and wages are not the only challenges facing Arabian women. Participation in policymaking and in parliaments is a major issue where the relative average for women in legislative bodies in the region is 17.9 percent which is second lowest in the world. Therefore, initiatives in the fields of public life and policy making should increase the integration of women. Tunisia sets as the best example of women representation in the political life, where women represent more than 31 percent in 2014 of members of parliament, up from 28 percent in 2011. In the 2011 elections, 5,000 women ran for parliament positions and almost as many ran in 2014. In order to understand this percentage we need to put it in context where in comparison to the 31 percent, 18 percent of national parliament seats are held by women in the United States and 27 percent in France. Tunisia was able to accomplish this due to the progressive electoral code that was modified in 2011.¹⁰⁵ Training of female candidates was done by NGOs as well to enhance their potentials¹⁰⁶. The Tunisian experience needs to be scaled up and implemented in other Arab countries in order to have balanced and stronger communities. Social media, from Facebook to Twitter, to YouTube, has become a platform for political and social communication.¹⁰⁷ Since then, social media has been viewed as a very important tool for women empowerment in the Arab region as well as a “gender equalizer”. Through social media, women took leadership positions working on changing their societies and spreading their voice. These activities were not only virtual; instead women were participating in on-ground protests and gatherings. For the first time an Arab Yemeni women, Tawakkul Karman, has received a Nobel Peace Prize¹⁰⁸ which is an historic accomplishment that gives hope for every women in the Arab world.

Women in the Arab world are launching initiatives that narrow this gap. “Women 2 Drive” is an initiative in Saudi Arabia that calls for permitting women to drive on their own and “HarrasMap” an Egyptian initiative that maps harassment activities and works on eliminating them. It is worth mentioning that the Saudi government has recently allowed women to drive through issuing them permits that was banned before, which is a developmental step towards gender equality in Saudi Arabia.

Case	ProAbleD
Area of intervention	Lebanon

¹⁰¹Momani, B. (2016). Equality and the economy: why the Arab should employ more women. Retrieved from:https://www.brookings.edu/wp-content/uploads/2016/12/bdc_20161207_equality_in_me_en.pdf

¹⁰²Momani, B. (2016). Equality and the economy: why the Arab should employ more women. Retrieved from:https://www.brookings.edu/wp-content/uploads/2016/12/bdc_20161207_equality_in_me_en.pdf

¹⁰³Momani, B. (2016). Equality and the economy: why the Arab should employ more women. Retrieved from:https://www.brookings.edu/wp-content/uploads/2016/12/bdc_20161207_equality_in_me_en.pdf

¹⁰⁴ OECD. (2014). Enhancing women’s economic empowerment through entrepreneurship and business leadership in OECD countries.

¹⁰⁵ Arab social media. (2011). The role of social media in Arab women’s empowerment. Retrieved from:<http://www.arabsocialmediareport.com/UserManagement/PDF/ASMR%20Report%203.pdf>

¹⁰⁶Claudet, S. (2014). *Arab women making slow strides*. Retrieved from: <http://www.al-monitor.com/pulse/originals/2014/11/arab-women-make-slow-progress.html>.

¹⁰⁷ Arab social media. (2011). The role of social media in Arab women’s empowerment. Retrieved from:<http://www.arabsocialmediareport.com/UserManagement/PDF/ASMR%20Report%203.pdf>

¹⁰⁸ Arab social media. (2011). The role of social media in Arab women’s empowerment. Retrieved from:<http://www.arabsocialmediareport.com/UserManagement/PDF/ASMR%20Report%203.pdf>

Key SDGs	SDG 4 – Quality education SDG 5 – Gender equality SDG 8 – Decent work and economic growth
Objectives	<p>Traditionally, online employment platforms are used to connect highly educated individuals with HR departments. However, blue collars are left behind in this model, whereby it is difficult for them to find employment as there is no dedicated platform for them. ShareQ, a Lebanese social enterprise, found a solution by creating a business model innovation, whereby they created online platform connecting blue collars with employers.</p> <p>ProAble, is an online platform connecting HR departments in companies to trainees of NGOs that received vocational programs and are ready to get employed. This platform gives special focus for people with disabilities and with financial challenges. ProAble is currently hosting candidates from several NGOs such as arcenciel, IRAP, Semeurs d'Avenir and ALEDA and made partnerships with networks from the private sector that will be potential employers such as UN Global Compact.</p> <p>This social innovation aims to integrate the young population that were trained by other NGOs on technical skills, into the job field by providing them short 3 days mindset readiness and career guidance for job integration, Inserting their profiles on the ProAble online platform and facilitate the job integration process with the employers to let the employer be able to find their profile easily for employment.</p> <p>This program leverages the impact of the programs made by several NGOs providing vocational training by complementing their efforts with job integration and achieve better employment results.</p>

Case 5 ProAble (Lebanon)

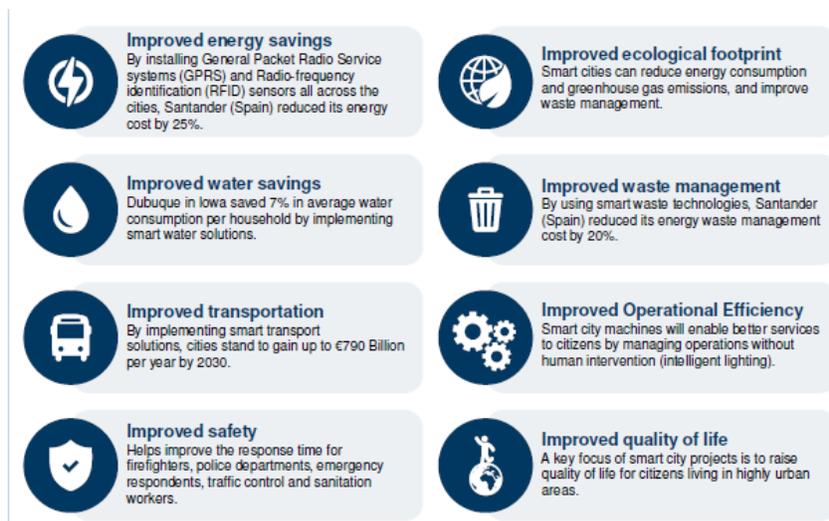
Goal 11: Sustainable cities and communities

In 2014, 30 per cent of the global urban population lived in urban slums representing almost 900 million individuals. Moreover, 50 percent of urban population is exposed to air pollution levels at least 2.5 times above the standard of safety.¹⁰⁹ Goal 11 is interconnected with a number of other SDGs. For instance, informal human settlements represent pockets of extreme urban poverty. These communities are the most vulnerable to climate risks and disasters, pushing them further into extreme poverty. Therefore, resilient cities are a key part of ensuring that progress on poverty is maintained (Goal 1). At the same time, reducing air pollution in cities will considerably improve human health since pollution has been set as a cause factor of some health problems such as strokes, heart diseases, lung cancer, and respiratory diseases, such as asthma (Goal 3).¹¹⁰

¹⁰⁹ Frost., & Sullivan. (2017). *The sustainable development goals (SDGs): The value for Europe*. Retrieved from: https://www.csreurope.org/sites/default/files/uploads/FS_WP_Sustainable%20Development%20Goals_05112017_RD_0.pdf

¹¹⁰ PwC. (2016). *Navigating the SDGs: a business guide to engaging with the UN Global Goals*. Retrieved from: <https://www.pwc.com/gx/en/sustainability/publications/PwC-sdg-guide.pdf>

Urban migration is leading to scarcity of resources. For instance, in Europe, it is predicted that urban population will grow to become 81 percent of the total population in 2025.¹¹¹ Added to overcrowding, lack of financial support in providing basic services, shortage in housing and declining infrastructure are some of the urban challenges, this will inevitably call for the formation of mega cities. Such growth is putting and will continue to put pressure on resources and services. For example, in many Arab countries migration to cities has led to the formation of poverty belts and more discrimination. The gap between the poor and middle and high-income classes has become wider leading to security threats in cities and between communities. In order for cities to ensure growth, these challenges should be overcome in a sustainable manner, i.e. reducing pollution and poverty. Therefore, it is essential for municipalities, officials, and private institutions to start thinking of smart and sustainable solutions for cities. One way to look for solutions is through community-based innovation. Cities need to plan and implement for new initiatives to become more environmentally friendly, safe, inclusive, and thus sustainable. This will need urban planning and innovation in terms of infrastructure. Integrating smart solutions within a city will contribute to solving the problems from their roots, and will also be a cost saving strategy as it ensures sustainable solutions to tackle problems of water management, waste management, mobility and energy.



The Arab region is one of the most urbanized regions. The urban population grew between 1970 and 2010 and it is estimated that it will double by 2050. This urbanization is said to be driven by economic development, unemployment, violence and conflict.¹¹² With overpopulation comes poverty where more than 18 percent¹¹³ of the population is under the poverty line. Pollution, violence and instability, are additional outcomes, making Arab cities vulnerable where sustainable development in these cities will face major challenges. Therefore, community-based innovation is essential in solving the problems of conflict arising from human displacement, poor infrastructure, and eventually achieving sustainability.

Figure 2 Key Smart City Impacts. Frost and Sullivan (2017)

Case	GIRAT
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¹¹¹ Frost., & Sullivan. (2017). *The sustainable development goals (SDGs): The value for Europe*. Retrieved from: https://www.csreurope.org/sites/default/files/uploads/FS_WP_Sustainable%20Development%20Goals_05112017_RD_0.pdf

¹¹² UN. (2013). *Urbanization and Urban Risks in the Arab region*.

¹¹³ Schaefer, K. (2015). *Making cities and human settlements, inclusive, safe, resilient, and sustainable in the Arab region*

Area of intervention	Canada
Key SDGs	SDG 4 – Quality education SDG 9 – Industry, Innovation and infrastructure SDG 11 – Sustainable cities and communities
Objectives	<p>The rural/urban digital divide is not only in developing countries, but present as well in industrialized countries such as Canada. This is due to the high cost of infrastructure, whereby both public and private sectors cannot justify economically such expensive investment in an underpopulated remote region. Abitibi-Temiscamingue is such a remote region in the province of Quebec, where many communities and villages do not have access to internet.</p> <p>The region dreamed of being connected to high-speed Internet to ensure its development. Gestion de l'Inforoute Regionale de l'Abitibi-Temiscamingue (GIRAT), is a community-based organization created by local population, volunteers, local authorities, as well as the Algonquin Anishinabek indigenous community who inhabit this region. What started in 1998 as a dream, became reality in 2002 with the announcement of two programs, i.e. Connected Villages of Quebec and Broadband Services for Rural and Northern Development, leading to the construction of the fiber network.</p> <p>GIRAT network is comprised today of over 1500 km of cables, touching 47 communities and done in partnership with 22 municipalities and partners. The impact of such a project goes beyond the region as it allows to reduce the rural/urban digital divide, allow local schools and libraries to have access to internet, connect the region with other regions as well reduce mobility and rural migration.</p>

Case 6 GIRAT (Canada)

Goal 16: Peace, justice and strong institutions

Globally, more than 1.2 billion people live in unsafe and fragile areas.¹¹⁴ Fragility includes violence, broken judicial system and institutions and sound to economic foundations. The first three relate to targets under SDG 16, the other two are drawn from the wider SDG framework.¹¹⁵ This goal aims to build safe and just communities. Such communities are built through good governance that respects human rights and law via transparent, effective and accountable institutions. However, there are still a number of countries facing extended violence and conflict in the presence of weak institutions. For example, in the past decade, the homicide rate in developing countries was twice that of developed countries.¹¹⁶ In the least developed countries, half of children under five were not registered. Similar to the other goals, goal 16 is connected to a number of goals and some are prerequisites for its achievement. For instance, reducing poverty will necessitate dealing with violence and conflicts. On the other hand, gender equality is a basic enabler for just, peaceful and inclusive societies.¹¹⁷

Governments and official institutions are the party responsible for the safety, development, and sustainability of any community with the help they receive from NGOs and civil society. Therefore, public institutions should be effective, productive, and accountable in order for them to gain legitimacy.

¹¹⁴ PwC. (2016). *Navigating the SDGs: a business guide to engaging with the UN Global Goals*. Retrieved from: <https://www.pwc.com/gx/en/sustainability/publications/PwC-sdg-guide.pdf>

¹¹⁵ OECD. (2011). *Fostering innovation to address social challenges*. Retrieved from <https://www.oecd.org/sti/inno47861327.pdf>

¹¹⁶ Frost., & Sullivan. (2017). *The sustainable development goals (SDGs): The value for Europe*. Retrieved from: https://www.csreurope.org/sites/default/files/uploads/FS_WP_Sustainable%20Development%20Goals_05112017_RD_0.pdf

¹¹⁷ PwC. (2016). *Navigating the SDGs: a business guide to engaging with the UN Global Goals*. Retrieved from: <https://www.pwc.com/gx/en/sustainability/publications/PwC-sdg-guide.pdf>

The seventeen sustainable development goals would not be successfully implemented without having the bases of a well-organized, productive, and accountable government. According to Transparency International, more than 6 billion people are directly impacted by corruption.¹¹⁸Therefore, community-based innovations enhances the role of institutions and that bridge the gap between officials and communities provide solutions to countries that are lagging behind in development. These are global challenges linked to governance that urge communities to start innovating in this field and create ways to make governments productive and efficient by eliminating corruption. Community-based innovation modifies the balance of power and shifts it toward local activists who are profoundly and individually affected by the long-term impacts of any alteration that occurs in the community. For instance, local communities in many countries act to fight corruption because they are suffering from the dysfunctional systems in which corruption lives and grows in their work place and within their society. Therefore, gender equality; participatory governance; equity, transparency; accountability and inclusiveness; rules based decision making; are values and basics that every community should have in order to develop.¹¹⁹

Case	I Paid a Bribe/ Rekonstrukce Státu
Area of intervention	India/Czech Republic
Key SDGs	SDG 8 – Decent work and economic growth SDG 16 – Peace, justice and strong institutions
Objectives	<p>Corruption is a plague leading to greater inequalities and increased poverty through misuse of public goods and resources. Several initiatives at local level have been put in place to report corruption, be it in developing or developed countries. Below are some examples of such initiative using technology and their impact.</p> <p>In India, corruption is particularly common in the judiciary, police, public services and public affiliations. “Petty corruption” is prevalent as ease payments. With all unsuccessful trials to eliminate corruption for the government, citizens stepped in and started to use innovation in the road to fight corruption. An anonymous website has become a model for change that asks the public to aid in the process towards eliminating corruption by placing their reports on applications and online podiums. I Paid a Bribe is a community-based mechanism developed by “Janaagraha”, a non-profit organization in India. The information is sorted and used to provide recommendations for enhancing procedures in government. The ultimate goal is to reduce corruption. During the whole process names are not allowed to be mentioned in order to avoid personal revenge trough this initiative.</p> <p>Since 2010, the platform has been met with an overwhelming public response with over 100,000 reports across more than 1000 cities in India to date. Moreover, the initiative has been developed where a mobile application has been introduced to raise accessibility. This initiative has been scaled up and</p>

¹¹⁸ PwC. (2016). *Navigating the SDGs: a business guide to engaging with the UN Global Goals*. Retrieved from: <https://www.pwc.com/gx/en/sustainability/publications/PwC-sdg-guide.pdf>

¹¹⁹ PwC. (2016). *Navigating the SDGs: a business guide to engaging with the UN Global Goals*. Retrieved from: <https://www.pwc.com/gx/en/sustainability/publications/PwC-sdg-guide.pdf>

	<p>replicated in Kenya, Pakistan, Hungary and Greece where ‘I Paid a Bribe’ websites are found there now.¹²⁰</p> <p>Similarly, in the Czech Republic “grand corruption”, is a serious problem for the country, with favoritism being especially challenging. With the spread of corruption and absence of any hope of improvement, citizens of the republic have taken an innovative approach to tackle the issue.</p> <p>In 2013, NGOs in the nation joined their efforts to put down nine measures that would diminish the occurrence of corruption. They asked citizens to address their representative Members of Parliament (MPs) and ask that they pledge support for implementation of the nine specific anti-corruption measures into legislation. The campaign “Rekonstrukce Státu” (Reconstruction of the State), holds MPs accountable for their promises by posting their positions on the campaign website. The website is a useful tool for reaching out to citizens as it contains clear explanations of the nine laws, illustrated by hard-hitting graphics that track the status of each legislation. In addition, it contains a photo gallery of the politicians who have pledged support for the Reconstruction of State, allowing citizens to see which MPs still need to be persuaded to participate. It therefore places significant pressure on MP’s to assent to calls by the public to support the anti-corruption measure.</p> <p>This approach proved successful as the campaign resulted in five of the nine laws being passed within three years. This initiative was instrumental in the country’s move towards increased transparency and accountability in the public sector, evidenced by its improvement on the CPI since employing this initiative in 2013. This is marked by the considerable leap in its standing on the 2015 CPI.¹²¹</p>
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Case 7 I Paid a Bribe/Rekonstrukce Statu (India/Czech Republic)

Strong, legitimate, safe, accountable, and transparent governance is a key factor for development and social-well-being in any community. Development and sustainability cannot be achieved in absence of good governance. Additionally, eradicating poverty and enhancing communal prosperity in the Arab region requires peace and stability. In general, Arab countries experience weak governance. This weakness is translated in the fragility of the states that has become the new reality for Arab region since 2011, with conflict facing Syria, Iraq, Yemen, and Libya while other countries face security concerns from terrorism.¹²² A good government is an institution that provides public goods to its citizens, eradicates violence, eliminates forms of corruption, and provides security as well as infrastructure, health and education. In short, good governance is key for development in any community.¹²³ Arab countries fall short with accountability, political stability, government effectiveness, and control of corruption leading to civil unrest. For instance, corruption is a major obstacle to development and a danger to stability. On

¹²⁰ Phillips, D. (2017). *Anti-corruption innovations: strengthening Jamaica’s integrity goal 16*. Retrieved from: http://www.capricaribbean.com/sites/default/files/public/documents/report/anti-corruption_innovations_strengthening_jamaica039s_integrity.pdf

¹²¹ Phillips, D. (2017). *Anti-corruption innovations: strengthening Jamaica’s integrity goal 16*. Retrieved from: http://www.capricaribbean.com/sites/default/files/public/documents/report/anti-corruption_innovations_strengthening_jamaica039s_integrity.pdf

¹²² World Bank. (2015). *Economic and social inclusion for peace and stability in the Middle East and North Africa*. Retrieved from: <http://pubdocs.worldbank.org/en/275801457980901628/New-MENA-Strategy-Presentation-FINAL-for-Web.pdf>

¹²³ Kaufmann, D. (2006). *The governance gap in the Arab countries: what does the data say?*

the other hand, higher transparency and public participation lead to improved policies and services. This is necessary to strengthen the trust of citizens in the public administration and trigger more inclusive development.¹²⁴

¹²⁴ OECD. (2015). The Middle East and North Africa. Retrieved from: http://www.oecd.org/mena/Active_with_MENA_EN.pdf

Chapter 4 - Enablers and drivers of Community-based innovation

Community-based and bottom-up approaches are very context specific. However, there are lessons that can be learnt as for the drivers and the barriers leading to the success or failure of such initiatives. Hence, drivers in one context could constitute a barrier elsewhere. In this section we are going to discuss major drivers and barriers of community-based innovations and provide some examples related to them.

The main challenge of the SDGs lies in their comprehensive nature, which includes economic, social and environmental goals. Since community-based innovation targets SDGs, the innovation policy adapted to address these SDGs need not include new components within its framework, but rather, an expansion of focus. Such innovation policy takes into account a more diverse range of factors, considers communal and specific dimensions and integrates the concepts of inclusiveness and citizen engagement.¹²⁵ SDGs are considered drivers of innovation since they are based on global challenges that are the main reason behind implementation of community-based innovations.¹²⁶ However, the accomplishment of the SDGs faces other challenges, from financial to technological to resourceful and more.

Barriers

In communities, especially those that are least developed or vulnerable, local leaders or officials lack communication and coordination with the local community.¹²⁷ Additionally, absence of information related to the needs and demands of local communities cuts the road in front of any innovative idea or initiative. Since the public sector is a vital factor in any local change, institutional barriers¹²⁸ are one of the major reasons for failure of community-based initiatives. Formal limits are legislation, economic rules and contracts, and informal limits are social principles and codes of behavior. If the institution does not evolve over time and adapt to change, it will be in “institutional lock-in” situation where it will refuse any change or development through its formal or informal regulations.¹²⁹

Social and cultural barriers in the communities themselves might be the major reasons behind the failure in innovation implementation for the idea of innovation is still new for local communities and change is something frightening that they will resist. Moreover, technology lock-in could be another barrier to innovation where local communities in developing countries might lack technologies and knowledge regarding them and are attached to their original traditional ways. At this point all barriers are connected, where cultural traditions refuse change in the absence of institutions that provide information regarding the benefits from the new technologies. Local human capital in developing countries usually is unaware of its potentials and with wrong or unsuitable external advice regarding innovation might mislead innovators into using inappropriate technologies that as well slow down the process of innovation. This all stands against development and social-well-being.

In developing countries, innovation faces challenges such as financial, poor infrastructure, shortage in the skills of the human capital, and corruption. Moreover, some believe that innovation until now has pushed

¹²⁵ ESCWA. (2017). *Innovation Policy for Inclusive Sustainable Development in the Arab Region*. Retrieved from: https://www.unescwa.org/sites/www.unescwa.org/files/publications/files/innovation-policy-inclusive-sustainable-development-arab-region-english_0.pdf

¹²⁶ Rosted, J. (2016). *A new nature of innovation*. Retrieved from: <https://www.oecd.org/innovation/inno/43730198.pdf>

¹²⁷ Allen, J., Sheate, W. R., & Diaz-Chavez, R. (2012). *Community-based renewable energy in the Lake District National Park—local drivers, enablers, barriers and solutions*. *Local Environment*, 17(3)

¹²⁸ Allen, J., Sheate, W. R., & Diaz-Chavez, R. (2012). *Community-based renewable energy in the Lake District National Park—local drivers, enablers, barriers and solutions*. *Local Environment*, 17(3)

¹²⁹ Foxon, T. (2002). *Technological and institutional ‘lock-in’ as a barrier to sustainable innovation*. ICCEPT Working Paper, available at <http://www.iccept.ic.ac.uk/public.html>

the world away from achieving the SDGs and not closer due to harsh nature of these innovations. Today, the idea of social inclusion and citizen engagement triggered the process of community-based innovation, innovation that involves various ways of utilizing science and technology to achieve social well-being.¹³⁰ However, it is important to note that innovation (including community-based) is not a panacea for all our societal problems. It itself can be a source of divide, accentuate problems and might have negative externalities. For instance, in developing countries, access to technology, internet and other services in urban areas, has led in some cases youth to migrate to cities; increased the rural/urban digital divide; and increased inequalities, inclusive within communities. Innovation for the sake of innovation can be detrimental to development efforts. Social innovations that target SDGs can turn “bad” and even “ugly”.¹³¹ Often social innovations have a very short lifespan, limited interest in transferring them and some social innovations do more harm than good. Many of the community-based innovations are local and cannot be scaled, so they last a couple of years and die afterwards, if not sustainable financially. Often, such innovations are driven by one individual in the community (charismatic, leader) and is dependent on their ability to develop and diffuse it. Social innovations are most often services and not traditional commercial products, requiring a lot of commitment and resources and time to diffuse them and insure their applicability in vulnerable areas. As the impact of such innovations take time, often we find disengagement and reluctance from beneficiaries who are looking for short-term, quick fixes. One of the biggest paradoxes in terms of social innovations and community-based innovations for social well-being is that even proven innovations often fail when transferred to another context, yet for a social innovation to have a real impact and convey change, scaling is key.¹³²

Drivers and enablers

The bottom-up nature of community-based innovations is said to lead to long-lasting behavioral change, self-sufficiency and efficiency.¹³³ From this arises the importance of local drivers and enablers that open the door and facilitate innovation implementation leading to sustainability and social-well-being. Community members and leaders are motivated by the social, environmental and economic advantages of community-based schemes. Yet, for these advantages to appear, the community members either need to be informed and convinced of the benefits or need to be part of such change. But, first of all, local human and financial capitals are the starting point for any community-based change. Their knowledge and efforts will be the basis of any initiative. Quality of education and capacity building in the education sector can hold back innovation. Investment in human capital should be a priority for all communities. Improving local research and employment conditions for the community members is essential to avoid cultural clashes and shocks.¹³⁴ There is increasing awareness of the importance of a change in culture in the Arab region, whereby work is being done in rural communities and with vulnerable populations such as women and refugees to train them on technical and soft skills and more importantly to empower them to become change makers and believe in their capacities of change and innovation. Given high rates of analphabetism and school dropout in rural communities and within vulnerable populations in the Arab region, technical skills and short programs are mostly offered by public and not-for-profit organizations in such areas to level up and build local human capital. For instance, UNICEF works on such programs with

¹³⁰ UNCTAD. (2017). *New innovation approaches to support the implementation of the Sustainable Development Goals*. Retrieved from: http://unctad.org/en/PublicationsLibrary/dt1stict2017d4_en.pdf

¹³¹ Brandsen T., Evers A., Cattacin S., Zimmer A. (2016) The Good, the Bad and the Ugly in Social Innovation. In: Brandsen T., Cattacin S., Evers A., Zimmer A. (eds) *Social Innovations in the Urban Context*. Nonprofit and Civil Society Studies (An International Multidisciplinary Series). Springer, Cham

¹³² Seelos, C., & Mair, J. (2012). Innovation is not the Holy Grail. *Stanford Social Innovation Review*, Fall, 2012, 44-49.

¹³³ Allen, J., Sheate, W. R., & Diaz-Chavez, R. (2012). *Community-based renewable energy in the Lake District National Park—local drivers, enablers, barriers and solutions*. *Local Environment*, 17(3)

¹³⁴ OECD. (2012). *Innovation for development*. Retrieved from: <http://www.oecd.org/innovation/inno/50586251.pdf>

Syrian refugees in Jordan and Lebanon, while Shanti in Tunisia works with women in rural areas to revive ancestral craft.

Additionally, building social networks between leaders, officials and members is vital for facilitating informational transfer and coordination.¹³⁵ Therefore, providing local members with the appropriate knowledge regarding any initiative is a driver. Moreover, preparing the community for the change through creating a culture for change is essential. Openness and change can endanger valued identities, group ways of life, and the feeling of being at home. Traditional and indigenous communities need to feel that this change is not an end of their group practices, solidarity, and beliefs. This is the role of innovators and local leaders; to make vulnerable communities at ease with the change. Therefore, organized and well planned social inclusion is a driver to any community-based change.¹³⁶ Given the traditional culture in rural areas in many Arab countries, technology and innovation can be seen negatively even if it comes from within. Often, religious, political and local leaders can play a key role leading to the success or failure of any initiative. Therefore, to ensure the success of any initiative, municipalities and local authorities play an essential role, as they bring credibility, and often have resources to assist in the creation and implementation of a bottom-up initiative. Therefore, when an organization such as RuralEntrepreneurs in Lebanon or IFAD in Egypt wants to train youth and women in rural areas, it is tightly working with local authorities and municipalities in particular. As for urban areas, we are seeing an exponential number of creative spaces such as co-working spaces, incubators and accelerators in the past decade all over the Arab region. This type of network is crucial to create a sense of belonging and reinforce ties between community-based change makers, who otherwise would not pursue such path, be it not for the support they get. For instance Chefchaoun in Cairo, Egypt and Dare Space in Rabat, Morocco, AltCity in Beirut, Lebanon, Impact Hub in Dubai, UAE, are co-working spaces with a strong social mission.

Institutional drivers play a major role in the success of community-based innovations. Official institutions can devise authoritarian frameworks that set the direction, encourage and reward the trial that encourages innovation and improves sustainability. They can reveal through implementing policies and informing the public about their dedication to reach the same objectives of the community members.¹³⁷ In addition to that, enablers are the experts, funders, and activists that are willing to work for the benefit of the whole community.¹³⁸ Community-based innovation aim at building safe, resilient, inclusive, and fair communities. But sometimes for an initiative to succeed it needs minimum levels of transparency and accountability. So that donations, for example, reach their target and not be misused.

Table 3 Enablers and Barriers of Community-based innovation

Enablers	Barriers
➤ Supportive Culture	➤ Lack of communication and coordination
➤ Citizen engagement	➤ Lack of reliable information and access to it
➤ Technology	➤ Informal limits (culture)
➤ Human capital	➤ Technology lock-in
➤ Rigid social networks	➤ Institutional lock-in
➤ Accountable and legitimate institutions	

¹³⁵ Bullinger, A., Neyer, A., Rass, M., & Moeslein, K. (2010). *Community-based innovation contests Where competition meets cooperation. Creativity and Innovation Management*. 19, 290-303.

¹³⁶ Silver, H. (2015). The contexts of social inclusion. Department of Economic & Social Affairs DESA Working Paper No. 144 ST/ESA/2015/DWP/144

¹³⁷ Foxon, T. (2002). *Technological and institutional 'lock-in' as a barrier to sustainable innovation*. ICCEPT Working Paper, available at <http://www.iccept.ic.ac.uk/public.html>

¹³⁸ Allen, J., Sheate, W. R., & Diaz-Chavez, R. (2012). *Community-based renewable energy in the Lake District National Park—local drivers, enablers, barriers and solutions*. *Local Environment*, 17(3)

Role of technology

Technologies are systems and thoughts that direct the production of goods and services. Technological inventions lead to technological innovations where new concepts find practical implementation through being useful and beneficial.¹³⁹ With the current advancements in technology and science, the probability of finding solutions to the majority of problems has increased tremendously, especially problems related to and associated with poverty.¹⁴⁰ However, technologies can in some cases lead to unexpected problems. Therefore, the global attempts to eradicate poverty in the developing world and other regions have emphasized the need to come up with the appropriate context specific technologies.

With all the enablers mentioned above, technology is considered one of the most powerful enablers for innovation, sustainability and development. This is because technologies provide the ways to act smarter and more sustainably¹⁴¹ and contribute to higher levels of economic output by providing human capital with new goods and services that can enhance social-well-being.¹⁴²

Technology is playing a big role in shaping human life and it is taking a bigger place in our day to day activities. Digital revolution like computers and cellular phones are spreading, creating connections we have never before imagined. Such major advancement holds potential to make our lives better and sustainable, however, this may create a digital divide that could leave those at the bottom even farther behind if not equally spread.¹⁴³

For instance, the mobile phone technology with all its services is able to reach every person in the world. It is expected that by 2020 more people will have mobile phones than electricity.¹⁴⁴ Developing countries have been able to benefit from this revolutionary invention avoiding hardwired communications technology and accessing less expensive digital technology. In developing countries, studies have suggested that the appropriate technology should represent a particular view of the community.¹⁴⁵ In order for any technological innovation to succeed, different cultural and geographical groups will need different technologies that are appropriate to their conditions and therefore, technological autonomy is essential to cultural characteristics. By this concept, cultural resistance will be avoided since the technology will be based on the community's demands and situation.

Hence, "appropriateness" of a technology is in generating innovation at the community level rather than at the national or international levels. One technological advancement that was able to penetrate easily in different parts of the world is mobile phones. The access to cell phone services has already encouraged numerous innovations, where a country such as Kenya¹⁴⁶ is considered one of the global leaders in this

¹³⁹ Szirmai, A., & Naude, W. (2014). *Technological Innovation, Entrepreneurship, and Development*. Retrieved from: <https://www.msm.nl/resources/uploads/2014/02/MSM-WP2013-17.pdf>

¹⁴⁰ Pattnaik, B., & Dhal, D. (2014). Mobilizing from appropriate technologies to sustainable technologies based on grassroots innovations. Retrieved from: <http://daneshyari.com/article/preview/375164.pdf>

¹⁴¹ Winthrop, R., McGivney, E., Williams, T., & Shankar, P. (2016). *Innovation and Technology to Accelerate Progress in Education*. Retrieved from: https://www.brookings.edu/wp-content/uploads/2017/02/global_20170223_innovation-and-technology.pdf

¹⁴² Szirmai, A., & Naude, W. (2014). *Technological Innovation, Entrepreneurship, and Development*. Retrieved from: <https://www.msm.nl/resources/uploads/2014/02/MSM-WP2013-17.pdf>

¹⁴³ Winthrop, R., McGivney, E., Williams, T., & Shankar, P. (2016). *Innovation and Technology to Accelerate Progress in Education*. Retrieved from: https://www.brookings.edu/wp-content/uploads/2017/02/global_20170223_innovation-and-technology.pdf

¹⁴⁴ Winthrop, R., McGivney, E., Williams, T., & Shankar, P. (2016). *Innovation and Technology to Accelerate Progress in Education*. Retrieved from: https://www.brookings.edu/wp-content/uploads/2017/02/global_20170223_innovation-and-technology.pdf

¹⁴⁵ Pattnaik, B., & Dhal, D. (2014). Mobilizing from appropriate technologies to sustainable technologies based on grassroots innovations. Retrieved from: <http://daneshyari.com/article/preview/375164.pdf>

¹⁴⁶ Winthrop, R., McGivney, E., Williams, T., & Shankar, P. (2016). *Innovation and Technology to*

field. Additionally, the increased connectivity has opened the door for easier and cheaper access to knowledge and information for people from different socio-economic backgrounds. For instance, 20 million books that were before restricted to the access of elite individuals and institutions are now available online due to Google's partnership with libraries from around the world.¹⁴⁷ These developments in educational services and access are promising for those who have not been able to access quality education before. The opportunities are not only limited to educational penetration, but they are reaching health and infrastructure and other sectors as well. Yet, with all these technological advancement, access to technology in poor communities and countries is still limited.¹⁴⁸ As for the Arab region, we see disparities in access to technology between and within countries. The urban/rural divide is deep and it is further accentuated by differences in socio-economic status, gender differences, education level, as well as infrastructure. For instance there is a clear divide between the Gulf countries and the rest of the Arab countries in terms of ICT.

Accelerate Progress in Education. Retrieved from: https://www.brookings.edu/wp-content/uploads/2017/02/global_20170223_innovation-and-technology.pdf

¹⁴⁷ Winthrop, R., McGivney, E., Williams, T., & Shankar, P. (2016). *Innovation and Technology to Accelerate Progress in Education*. Retrieved from: https://www.brookings.edu/wp-content/uploads/2017/02/global_20170223_innovation-and-technology.pdf

¹⁴⁸ Winthrop, R., McGivney, E., Williams, T., & Shankar, P. (2016). *Innovation and Technology to Accelerate Progress in Education*. Retrieved from: https://www.brookings.edu/wp-content/uploads/2017/02/global_20170223_innovation-and-technology.pdf

Chapter 5 - Recommendations

Role of public authorities

In order for community-based innovations and initiatives to succeed, public authorities are key players. They have two main tasks in ensuring the success of community-based innovations by fostering an enabling environment for innovation and scaling successful initiatives. Public policies are key drivers for innovation and motivate people to seek new ways to solve current problems. The role of the government is essential in permitting the implementation of community-based innovations as they require public sector support in order to function and scale. Unfortunately, in developing countries, public institutions are weak and face many failures.

For governments to be able to encourage community-based initiatives, it needs to build appropriate systems of transparent, advanced, and accountable institutions. Regulation is one of the government's tools to affect innovation. It plays a vital role in determining the welfare of communities. If well put and implemented, it can effectively contribute to development and social well-being of any community.¹⁴⁹ This is because effective regulations support social unity and triggers development through better transparency that strengthens the relationship between citizens and their government. This facilitates the process of pin pointing the community's problems and initiate community-based innovations.

Governments, through regulations and policies, are required to minimize risks associated with innovation and facilitate the implementation of effective innovation. It is required to spread trust among citizens and eliminate all concerns that inhibit successful innovations. Financial support is a key tool to any successful intervention and it is mainly the role of the government. Governments can promote community-based innovation by:¹⁵⁰

- Adopting it
- Reducing its risk
- Joining its forces with other private innovators
- Using regulations and policies to encourage it

This commitment by public authorities must be both at the national and local levels. Moreover, collaboration with civil society and the private sector as key players in any community is essential to the success of any initiative. Therefore, mapping all stakeholders and ensuring support from public authorities are key conditions for a successful implementation of any CBI.

Scaling up

Beyond facilitating and creating the appropriate environment and policies for community-based innovation, scaling community-based innovation might be the most important stage in the stages of innovation. Scaling up is defined "expanding, adapting, and sustaining impactful policies, programs or projects in different places and over time to reach a greater number of people."¹⁵¹ Existing literature regards scaling as a final stage of the innovation process. Scaling a community-based innovation is said to occur only after identifying an effective initiative. This is because an idea, with its abstraction, can be grown, replicated, scaled, or adopted only when it's proven in practice.

¹⁴⁹OECD. (2010). Regulatory policy and the road to sustainable growth. Retrieved from:

<https://www.oecd.org/regreform/policyconference/46270065.pdf>

¹⁵⁰ Boghani, A., & Jonash, R. (1993). The role of government in fostering innovation. Retrieved from:

http://www.adlittle.com/uploads/tx_extprism/1993_q1_23-27.pdf

¹⁵¹Begovic, M., Linn, J., & Vrbensky, R. (2017). *Scaling up the impact of development interventions: lessons from a review of UNDP country programs*. Retrieved from: <https://www.brookings.edu/wp-content/uploads/2017/03/global-20170315-undp.pdf>

For assuring the best results, a scaling up mechanism needs to be planned and executed ahead of time. A key step is to study the drivers and enablers that ensure that the initiative will go to scale and the barriers as well in order to eliminate them and their effects.

Table 4 Enabling conditions for scaling up

Enabling conditions: ‘Drivers’ and ‘Spaces’ for scaling up ¹⁵²	
Drivers	Spaces
Ideas/solutions	Fiscal/financial/costs
Vision of scale	Political/ownership
Leadership/champions	Policies, laws and regulations
Market or community demand	Natural resources
Incentives and accountability	Culture
External catalysts	Security
	Partnership
	Learning

Scaling up takes three forms, horizontal (transmission to more people), vertical (higher effects through rules and regulations), or functional (greater areas of commitment). The ideal form results from combining the three types together. Scaling up is a process that requires regular monitoring and evaluation.

Capacity building

To promote community-based innovation governments in general and specifically in the Arab region need to focus on capacity building. An analysis of the community needs, capabilities, expectations and available resources should precede capacity-building which should be done in a participatory manner. All activities need to be transparent where every member knows his role and benefits and thus equality will increase and social cohesion will be present to foster innovation. Additionally, there are other things governments can do to maximize the potential for innovation. The most important thing is to consider innovation as a priority formally, in all regulations and policies, and informally, in building an innovative culture. Permitting and enhancing connections and networking and cooperation between the different stakeholders such as citizens, government and the private sector, are essential. The establishment of partnerships with all important stakeholders should be facilitated and encouraged in order to benefit from their expertise, knowledge, and financial support. This, with transparency and openness and other regulations and actions, promotes trust between the government and citizens and facilitates the implementation of any innovation.

Case	Nature Conservation Center
Area of intervention	Lebanon
Key SDGs	SDG 6 – Clean water and sanitation

¹⁵²Begovic, M., Linn, J., & Vrbensky, R. (2017). *Scaling up the impact of development interventions: lessons from a review of UNDP country programs*. Retrieved from: <https://www.brookings.edu/wp-content/uploads/2017/03/global-20170315-undp.pdf>

	SDG 13 – Climate change SDG 17 – Partnerships for the goals
Objectives	<p>In recent years, the Nature Conservation Center (NCC) at the American University of Beirut (AUB) undertook two initiatives to scale participatory and community-based projects using technology.</p> <p>First, what started as a participatory mapping project dubbed <i>Baldati-Bi'ati</i> in 2010 by NCC, with the aim to better capture the social-cultural dimension embedded in nature conservation and the findings from 80 participating village communities in Lebanon by 2016, is currently undergoing a digital makeover, by becoming an app called <i>Daskara</i>. The app is centered on the local communities and will be for everyone interested in exploring local natural and cultural sites. It will also serve as a tool for everyone who wants to actively engage in conservation and sustainable development by donating to sustainable projects in their beloved hometowns and villages with a touch of a button from anywhere in the world. Starting in Lebanon and expanding globally, <i>Daskara</i> is set to become a venue for promoting and instilling unquestionable cultural, natural, and heritage value with the importance of preserving these assets for sustainable growth and for generations to come.</p> <p>Second, AUB-NCC is working to demonstrate the value of citizen science for engaging community members in assessment of local water quality and co-creation of relevant solutions. In a town of 30,000 in southern Lebanon, AUB-NCC's approach to community based citizen science has resulted in the formation of an active and independent group of primarily women citizen scientists. The group has publicly exposed contamination in 7 out of the 8 wells feeding their community's domestic water supply and, based on this newfound knowledge, community members are pressuring responsible water authorities for socially and environmentally responsible water management. Without this water quality data, community members wouldn't be able to effectively advocate for better water.</p> <p>The Center is now prepared to scale its community based citizen science program through the development of <i>Test the Water</i>, a mobile application and web platform that will enable concerned citizens to daylight institutionally locked water quality data, rapidly assess domestic water quality, form topic specific pressure groups, exchange with water specialists, and develop easy-to-interpret datavisualizations. By mobilizing citizens in the scientific process, AUB-NCC hopes to foster data-informed public awareness on concerning water contamination and co-creation of relevant solutions for communities facing poor water quality.</p>

Case 8 Nature Conservation Center (Lebanon)

Conclusion

The objective of this study is to provide an investigative report on *community-based innovation and technology for improved social well-being*. As many of the terms and concepts are very abstract, as a first step, we defined and delimited the key terms and definitions used in this report. It is key to understand what a community is and what an innovation is in order to tackle the challenges and opportunities. A community-based structure implies that the community members are actively participating and their capacities, skills and resources are recognized and built upon to bring protection and solutions, and supports the community's own goals. It can assist communities in preventing social problems and dealing directly with those that arise, rather than having external mediators step in and take these tasks. This bottom-up approach is very different from traditional top-down approaches as it allows for real appropriation. This is linked with the second section of this report whereby we put community-based innovation in context and highlight the importance of local culture and community readiness. A one size fits all approach to development and innovation cannot take place if solutions and actors are not embedded in the local community and approach.

Linking community-based innovation to social well-being has to be aligned with the SDGs. As global efforts have been joined in order to set a plan to reduce inequalities and to increase sustainability 17 goals, targets and indicators were set to be achieved by 2030. Literature has shown that community-based innovation is key towards achieving these SDGs. In this report we focus on five SDGs i.e. end poverty in all its forms everywhere (Goal 1); ensure healthy lives and promote well-being for all at all ages (Goal 3); achieve gender equality and empower all women and girls (Goal 5); make cities and human settlements inclusive, safe, resilient and sustainable (Goal 11); promote peaceful and inclusive societies for sustainable development; provide access to justice for all and build effective, accountable and inclusive institutions at all levels (Goal 16). We discussed the different SDG goals within the Arab context and highlighted achievements and challenges faced in this region of the world. Moreover, given the heterogeneity in terms of culture, development, infrastructure, role of institutions, etc. between the different countries, we tried to differentiate and

In this report, community-based innovation was defined and studied in relation to development and social well-being. A special focus was on technology as the major driver to any innovation. Innovation in the Arab region was extensively investigated. This report was able to show that public and civic engagement are essential in building trust in public institutions, social capital and social cohesion in local communities. Community-based innovation is a process that requires collective efforts, time, and financial resources. The starting point of this process is to identify the problem (poverty, gender inequality, health...).

Given the urgency of the challenges faced by all countries in the Arab region in terms of development and social well-being, it is imperative to put in place mechanisms to encourage community-based innovation as local communities know best their problems and opportunities in their communities. Moreover, public authorities must encourage and support such initiatives and facilitate access to technology in all its forms as it is a key enabler to achieving the set objectives. Moreover, the use of technology can facilitate and drive the scaling up of successful initiatives as it was seen in many of the case presented in this report. Finally, public authorities have a key role to play in ensuring local development and community-based innovations should not be seen as a way to transfer the responsibility of social well-being to the local community, but rather as an opportunity to achieve SDGs in cooperation of local communities.

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