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ASSESSMENT AND DEVELOPMENT OF A FRAMEWORK FOR THE JORDAN GREEN BUILDING COUNCIL

Final Report

August 22, 2008

This publication was produced for review by the United States Agency for International Development. It was prepared by Bahar Armaghani

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FINAL REPORT

USAID JORDAN ECONOMIC DEVELOPMENT PROGRAM

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CONTENTS

EXECUTIVE SUMMARY.....II

TASK 3: RECOMMENDATIONS..... VII

TIMELINE FOR PHASE I:..... 1

B. PHASE II:..... 1

JGBC CORE FOUNDING GROUP..... 4

ACTION PLAN: 9

CONCLUSION:..... 10

EXECUTIVE SUMMARY

In the wake of recent climate change and energy crises and the realization that buildings contribute to majority of energy consumption and emission of greenhouse gases, SABEQ took the initiative to address the issue of energy, water, and environmental conservation in Jordan, in an effort to reduce Jordan's energy consumption in buildings, and ultimately decrease the burden of the *energy bill on the economy* and reduce Jordan's carbon foot print. SABEQ has been working closely with private and public sectors in Jordan to bring together the stakeholders and to take a step to address Jordan's sustainable initiative. This initiative will bring the biggest change to the country. It will increase environmental, energy, and water conservation awareness and educate the public on this important issue. This will ultimately reduce energy consumption and enhance the efficiency of water use, and therefore minimize the risk of quick depletion of scarce water resources in Jordan at current consumption levels and structure. Also, this initiative will bring a whole new market to the country (the green market) related to sustainable build environment from planning, design and construction services to building products, and hence creating jobs and healthy prospering economy.

Since October 2007, SABEQ has been in communication with Jordan's Ministry Public Works & Housing regarding conservation to assist in governing the provision of technical assistance in different areas, including the introduction of green buildings (new construction and existing, commercial and residential) concept and green infrastructure including sustainable roads and streets and ultimately developing whole green cities that has longevity with trip bottom line that benefits people, economics, and environment.

With the rapid growing Green Building movement around the world due to the inevitable climate change and energy crises, Jordanians are feeling the rising cost of fuel. With Jordan's strategic position in the Middle East and increasing interest from some stakeholders in the country, SABEQ took the initiative to discuss the issue of green buildings with these stakeholders, realizing that Jordan's strategic position in the Middle East can play a big role in bringing change to the region. In addition, it can provide technical support with its abundant population of professionals in the build environment industry.

SABEQ has been in communication with interested stakeholders in the country to establish a **green building unit** that will eventually evolve to Jordanian Green Building Council (JGBC), a non for profit organization. I had the privilege to meet with some of these stakeholders. Later in this report comments on each meeting are posted. Since the green building concept is new to the country, SABEQ decided to hire an independent party who is familiar with green buildings to meet with SABEQ and all the stakeholders to assess and report the status of the green buildings movement in Jordan. This assessment was based on tasks that SABEQ requested to be included in the evaluation. The status of each task will be stated and proposed recommendations for each task will be presented to further enhance the green building initiative in Jordan.

Also, based on my observation there it is best to explore the implementation of green buildings in Jordan in two phases. Phase I is to use the green building in a small scale implementation, introduction, data collection, and try out, phase II is full large scale implementation nationally.

Task 1: An introductory workshop to United State Green Building Council (USGBC) and Leadership in Energy and Environmental Design (LEED), green building rating system was conducted on Sunday, August 3, 2008 and completed on August 6, 2008. About 45 A&E Business Council members attended.

The workshop covered overview of the industry, sustainable design principles and concepts, and application of the LEED-NC green building rating system, process of LEED certification and the levels of LEED certification (Platinum, Gold, Silver, and Certified) and the requirements for the varying levels of certification. The process for registering a building for LEED certification and the implementation of a workspace at LEED Online was addressed. The six categories of LEED (Site, Water, Energy, Materials, Indoor Environmental Quality and Innovation) were covered to include the intent of each credit in each category, the requirements for attaining the credit, and the documentation requirements. Also, other LEED rating systems were reviewed including LEED-EB, LEED-CS, LEED-CI, LEED-H, LEED-ND, LEED for schools, and LEED for campus and multi buildings.

The workshop was well received by the attendees.

Task 1 Recommendation:

Since this was the first introductory workshop on LEED, green building rating system concept, and to maintain continuity and build and support the sustainability movement in Jordan I recommend the followings:

1. SABEQ to conduct a survey of the attendees to get feedback and start building a database on the green building progress. While I was in Jordan, I met with Dr. Gwen El Sawi at SABEQ where her department can take on the survey task.
2. Improve future workshop logistics including voice, data, and temperature comfort.
3. Schedule LEED-NC Technical review workshops and invite all interested parties including but not limited to architects, MEP engineers, civil engineers, structural engineers, landscape architect, interior designers, contractors, developers, Owners, product manufacturers, college students, city and government officials, school teachers and facility's personnel, Lawyers, financial advisors, etc. this will help individuals to get familiar with green buildings, LEED, and their benefits and assist them to take LEED Accredited Professional (LEED AP) exam. This workshop is (one day).
4. Conduct advanced LEED training on how to lead a LEED project from inception to occupancy. This workshop is (one day).
5. Conduct LEED training for contractors only. This workshop is (half a day).
6. Conduct training on energy modeling. This workshop is (half a day) or (one day).
7. Conduct Commissioning (Cx) training. This workshop is (one day)
8. Conduct LEED online training. This workshop is (2 hours).
9. Identify list of qualified educators who have experience and have completed LEED projects that can conduct these education session.
10. Provided these educational programs ASAP to build on the momentum and interest in green buildings.

The workshop attendees and the public and private sectors that I visited showed a tremendous interest in LEED rating system. They are passionate about making the difference in greening Jordan and saving energy. I highly recommend that this energy and Enthusiasm for developing and building green to be captured and used to further the green building movement in Jordan.

Task 2: Reviewed the current green building activities in Jordan by conducting interviews with interested and involved firms and state officials who support green buildings movement in Jordan.

On August 4, 2008, the following meetings were conducted with different entities, which are interested in green buildings and are working in some form on green building initiative in Jordan:

A. Group meetings:

1. A&E Business Council board members, a non profit organization. This group of architects and engineers who have made a commitment to do and give what ever it takes to bring the awareness, education, and provide support to all in area of green buildings with an ambitious goal in making the difference in the energy, water, and environmental conservation of Jordan. This group is passionate about making the

difference for the people of Jordan who are feeling the ever increasing energy costs and preserve the beauty of Jordan for generations to come. Members of A&E council who are in planning and design are already practicing the concept of designing buildings that are energy and water efficient. The group is very well organized and versed in the challenges and issues that are head to move Jordan to the next level in the international plat form.

2. Consolidated Consulting, a consulting firm with one shop stop. It is a member of A&E Business Council. This firm has all building design professionals in-house including planners, architects, MEP, civil, and structural. Members of this firm are very committed to the green building initiative in Jordan. They have formed a green building unit within the firm with seven members and a green building unit leader, who did a great presentation on their on going work with green buildings and the projects that they are working on. The team is well organized and committed to design/build green. The green unit team leader attends every green building presentation and seminar and is planning on taking the LEED AP exam. This team is fully committed to support the green building initiative and will support and participate in the green building movement in Jordan.
3. Faris & Faris architects, an architectural firm, A&E Business Council member. Very supportive and committed to the green building initiative in Jordan. Faris & Faris has been practicing green design for years. It is dedicated to provide all the support to move the green building initiative in Jordan forward. This firm has taken a proactive approach in learning about green buildings, a dedicated architect on staff that is learning about LEED and green buildings and is planning to start a green unit within the firm.
4. Maisam architects & engineers, A&E Business Council member. Members of this firm are the prime supporter and advocate for Jordanian green buildings initiative, and in principle have been practicing green design. The energy, enthusiasm and passion of the team are the driving force behind the green building movement in Jordan. The team is just getting familiar with LEED and green buildings.
5. Dar Al-Omran, architectural and engineering firms, A&E Business Council member. Very committed to support green building initiative in Jordan. Members of the firms attended green building workshop and in the process of embarking on a large scale LEED project in Jordan. The firm has been designing a green large scale project.
6. National Energy Center, I met with Mr. Muawiyah Faydi, energy policy maker. He discussed the department energy's initiatives including the new code related to insulation use in the buildings, PV and solar systems initiative that is under development, and tax except law for efficient equipment that has been released. The department showed its full support and readiness to do what ever it can to push forward any initiative related to green buildings in Jordan. Mr. Faydi showed his readiness to be part of the team that will initiate green building program in Jordan.
7. Building Research Center, I met with Dr. Tareq Al-Hadid who is the director of the center and one of his architects. This center has been doing great work to further enhance the existing building codes and incorporate some green building practices in the updated building codes. At the same time the center has initiated some activities

with international universities related to green building, and it is providing educational seminars to the public and private sector. The latest initiative is a joint venture with Lund University in teaching software for building energy and daylight modeling. The center has an extensive knowledge about the state programs related to environment including recycling efforts, building code revisions and green building initiative including what is proposed by the center to add the green building standards to be part of the code but not be mandatory to use. Dr. Al-Hadid believes that the green standards should be available for Owners and developers to use with incentive from the government. The center architect staff is getting familiar with LEED standards and will continue to support green building initiative. The center director believes that green building rating system like LEED can be implemented partially such as the water and energy categories and then move forward with the remaining green building system. Dr. Al-Hadid believes that the individual pockets of green building enthusiasts need to come together and work together for a greater Jordanian green building program.

8. University of Jordan, every large scale initiative such green buildings needs support from the academic in all level including k-12, colleges and universities. University of Jordan can play a big role in education and producing future green building professionals. During our meeting with Dr. Samra, dean of Engineering, he was very interested and supportive of the green building's initiative in Jordan and energy and water efficiency and environmental stewardship. At the meeting a discussion to initiate a partnership between University of Jordan and University of Florida was discussed to share knowledge, tools and skills among both universities in the name of sustainability exchange.

B. Tools and skills required for design and certification of green buildings:

1. The most important tools and skills required to develop, build and design green are readily available within Jordan including:
 - a. Jordanians who are interested in designing and building green.
 - b. Local professionals who are familiar with local conditions and environmental challenges and opportunities.
 - c. Local government and professionals who can influence the change in building codes and requirements.
 - d. Local officials that are creative thinkers and embrace change.
 - e. The common goal of all public and private sectors to adapt a green building rating system such as LEED, and localize it for Jordan.
2. Adaptation and localization of LEED rating systems that will include:
 - a. Utilizing LEED reference guide.
 - b. Conduct educational workshops to prepare professionals for LEED AP exam.
 - c. Promote local LEED projects and use them as case studies showing the challenges, opportunities and lessons learned.
 - d. Learn LEED on-line.

- e. Navigate USGBC and World Green Building Council (WGBC) web sites for resources, CIRs, and case studies.
- f. Photometric software (by electrical engineer).
- g. Energy modeling software (by mechanical engineer).
- h. Day light simulation (by architect).
- i. Promote design and engineering firms to mentor college students in design and building green.
- j. partnership among local universities and college to share knowledge and skills in sustainability.

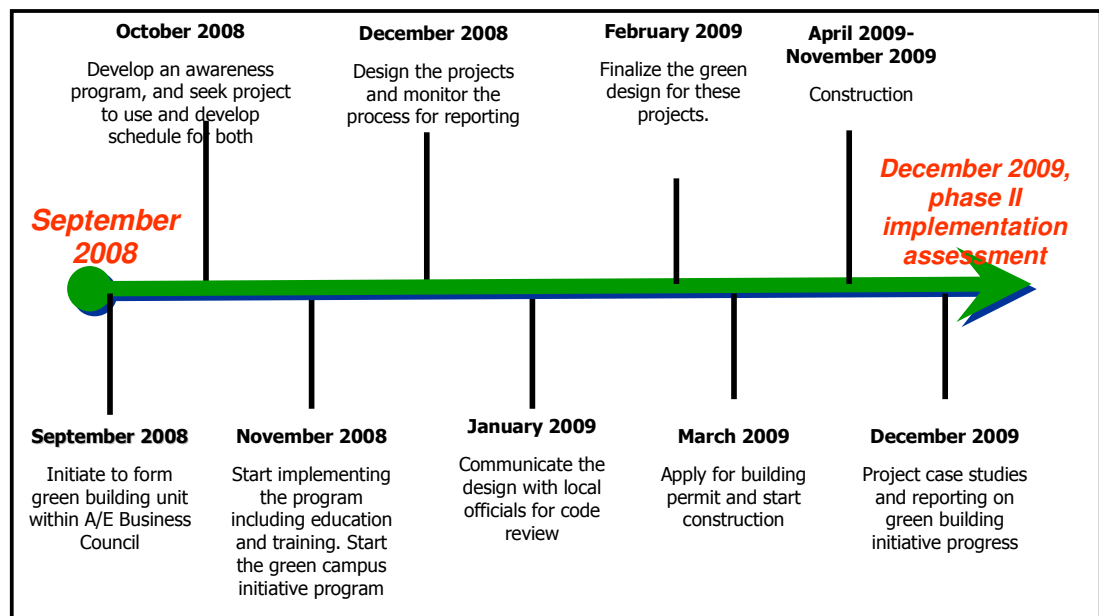
Task 3: Recommendations

Based on my observation and completion of **task 1 and task 2**, it is recommended that the path to establishing JGBC to be in two phases:

A. Phase I: A/E Business Council to form a green building unit (this unit to focus on LEED as green building rating system). The purpose of this phase is to start green buildings on a small scale and find out the actual degree of commitment and interest from all the parties that have shown interest in green buildings. This phase will set the stage for unleashing a national green building campaign that will lead to establishment of JGBC. This unit will:

- a. Spread green buildings awareness among its members and other building sectors.
- b. Provide education and training on green buildings in Jordan.
- c. Initiate few LEED pilot projects and build case studies around them.
- d. Document the process for these projects.
- e. Work with local authorities and share green aspects of the buildings with them and incorporated into codes where it apply.
- f. Work with universities and colleges and share the green building concept with them.
- g. Partner with schools and universities to initiate “green campus initiatives”.

TIMELINE FOR PHASE I:



B. PHASE II:

This can be approached in two ways:

- a. During Phase I progress and reporting by A/E, the start of this phase can be evaluated and initiated in a small scale based on the progress in phase I. Forming founding group can be initiated.
- b. At the completion of phase I, A/E Business Council to report data and finding on the LEED pilot project and move to Phase II. In this phase the education and awareness goal has accomplished and the work toward establishing JGBC to begin. If phase I is effective, phase II implementation will be an easy task.
- c. Let's phase II begin.
 1. Based on above observation of the private and public sectors who are involved in green building initiative in Jordan, a united front among all the stakeholders will be the vehicle to establish and sustain JGBC.

Every public and private sector involved with the build environment can be included in this effort. The success of the JGBC program is dependant on the participation, commitment, and dedication of all the stakeholders, see (figure 1). Few organizations in Jordan have initiated some form of work toward green building initiative in Jordan. Building Research Center, A&E Business Council, individuals A/E firms, and even graduate students has done work toward green building program in Jordan. If all these resources come together, the JGBC program will be the fastest growing and strongest in the region. To unleash this program that has been brewing in different pockets, it is prudent to include all interested parties and meet the need and demand from the local and regional market and provide guidance, resources and education to sustain the movement.



Figure 1

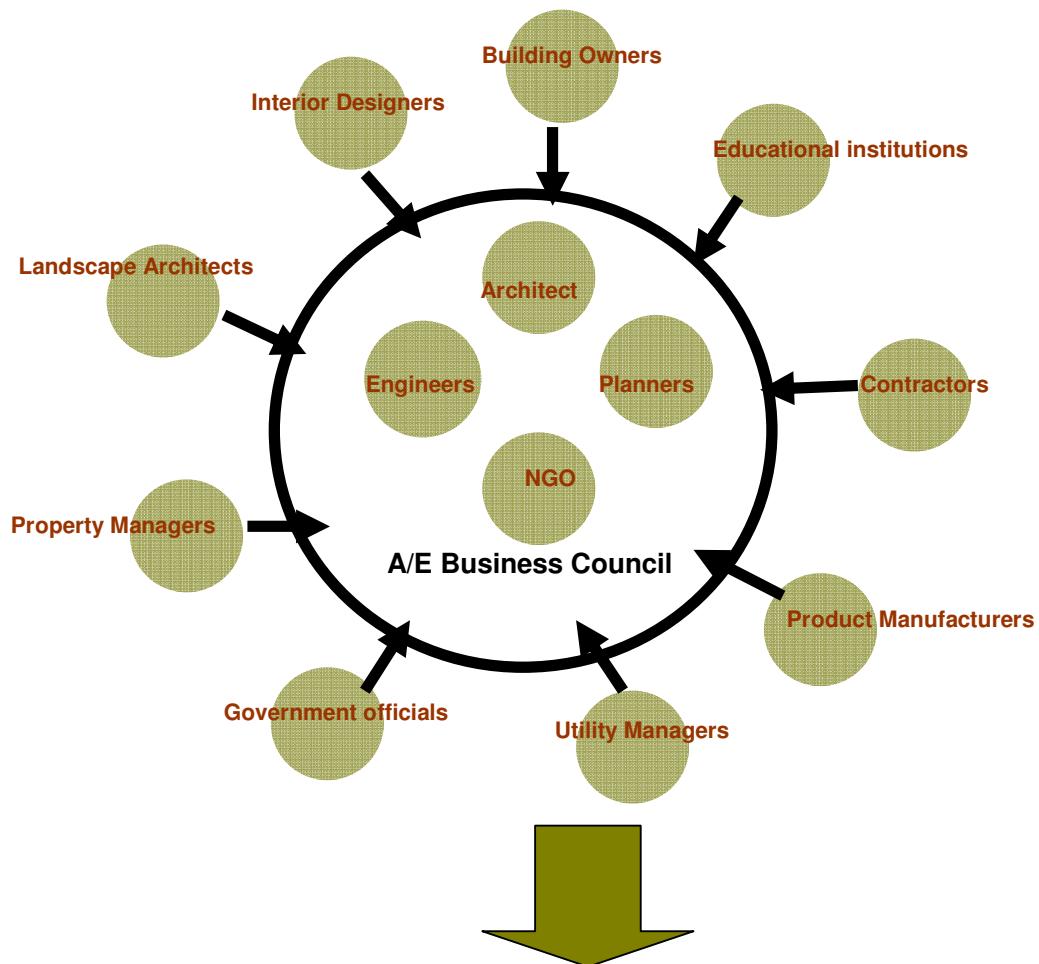
JGBC will compose of leaders from every sector of the building industry working to promote buildings and communities that are environmentally responsible, profitable and healthy places to live and work. This green building movement will create a whole new market in Jordan that will create jobs locally and regionally and will contribute to the economic development of Jordan.

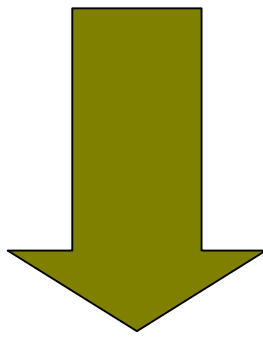
Based on my observation, JGBC can be formed by any group that I visited because they all have a common goal for a sustainable Jordan, save energy, water and be the steward of the environment. Below are three scenarios for formation of JGBC.

1. A/E Business Council:

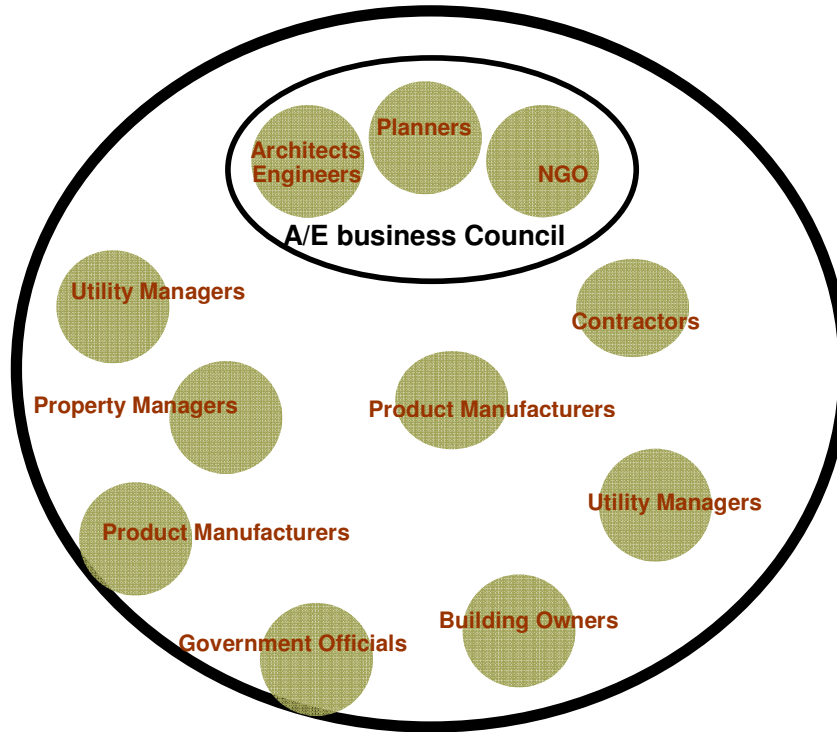
An NGO with members committed to volunteer their time and resources to establishing JGBC. Below is list of pros and cons for A/E Business Council to lead the JGBC until it is established and the organization operates by it bylaws.

Pros	Cons
Experience in NGO establishment	Members only in planning & design
Well established organization	
Willing to work with others	
Willing to volunteer & find volunteers	
Already established with members	
Ready to lead	
Knowledge of green buildings	
Abundant technical resources	
Working with building market sector	
Influential in building market sector	
Familiar with existing building codes	
Knowledge & experience to contribute to change	
Can expedite the establishment of JGBC	





JGBC CORE FOUNDING GROUP



Develop a business



Legal
bylaw

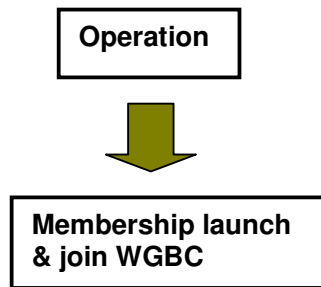
Form a founding Board

Establish
funding

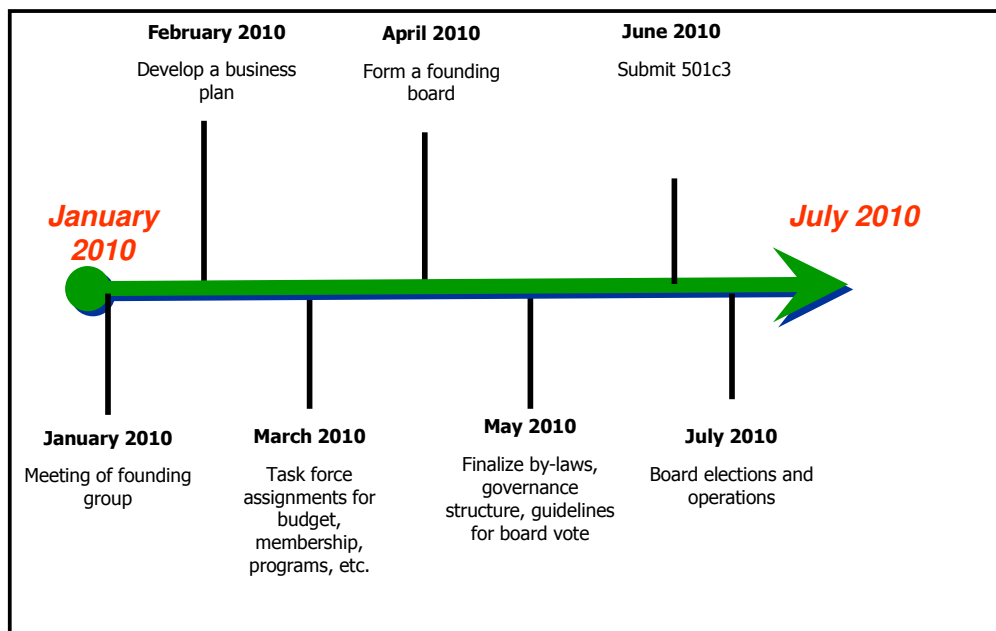


Incorporate as non-profit





Timeline:

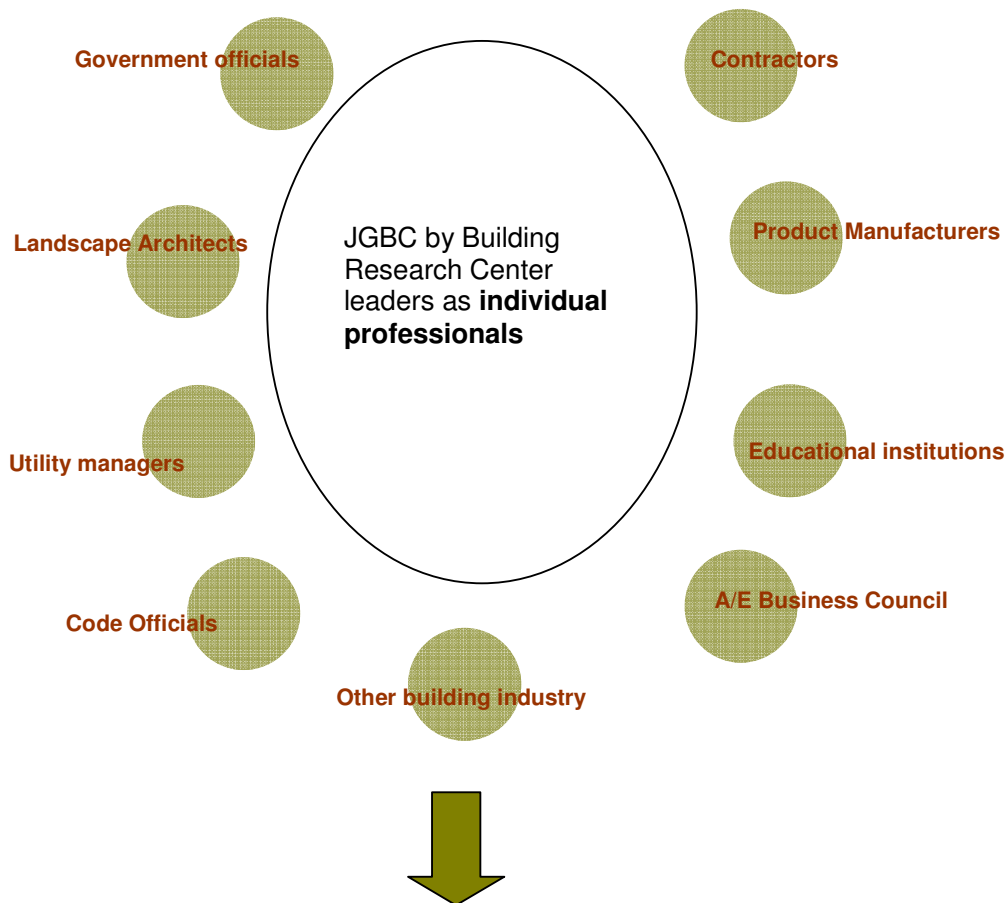


2. Building Research Center;

Is a well-established governmental entity that is well versed in the building codes, it reviews the construction documentation and issues building permits. Below is list of pros and cons for Building Research Center to lead the formation of JGBC.

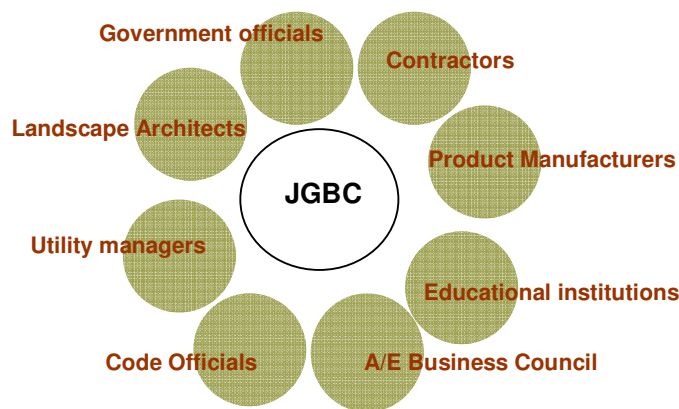
Pros	Cons
Influential in building market sector	Governmental entity
Familiar with existing building codes	No experience in NGO establishment
Working with building market sector	Not willing to volunteer & find volunteers
Well established governmental office	Expect to be paid to start JGBC
Willing to work with others	Establishing JGBC can take long time
Ready to lead	
Basic knowledge of green buildings	

This scenario is not possible under Building Research Center because it is a governmental agency. JGBC must be an NGO. Individuals from Building Research Center can form an organization and bring all the building industry together to form JGBC. Below shown scenario if individuals from Building Research Center are willing to take the initiative. This will need major coordination, hundreds of volunteer work, and a long time to execute.

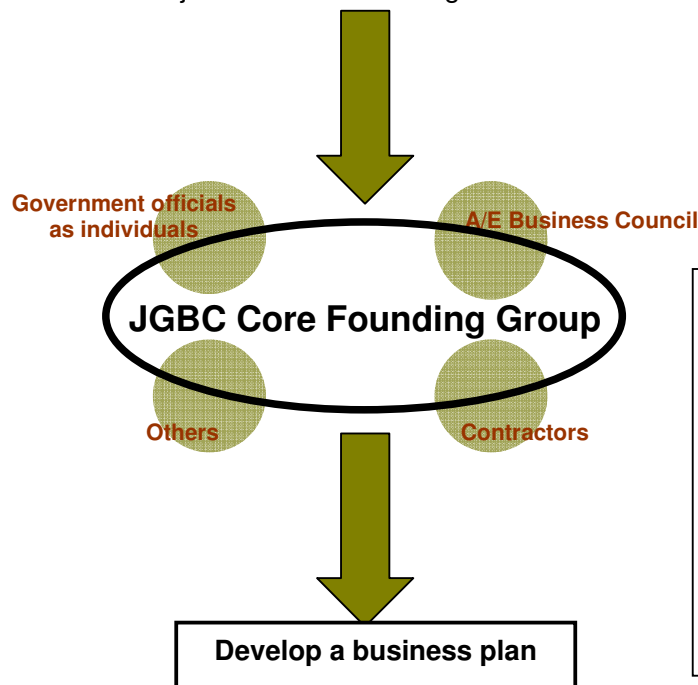


3. Joined venture among all interested stakeholders: This is similar to the A/E Business Services model except there is a joined leadership effort from start. This could be a time consuming model due to the learning curve of some members.

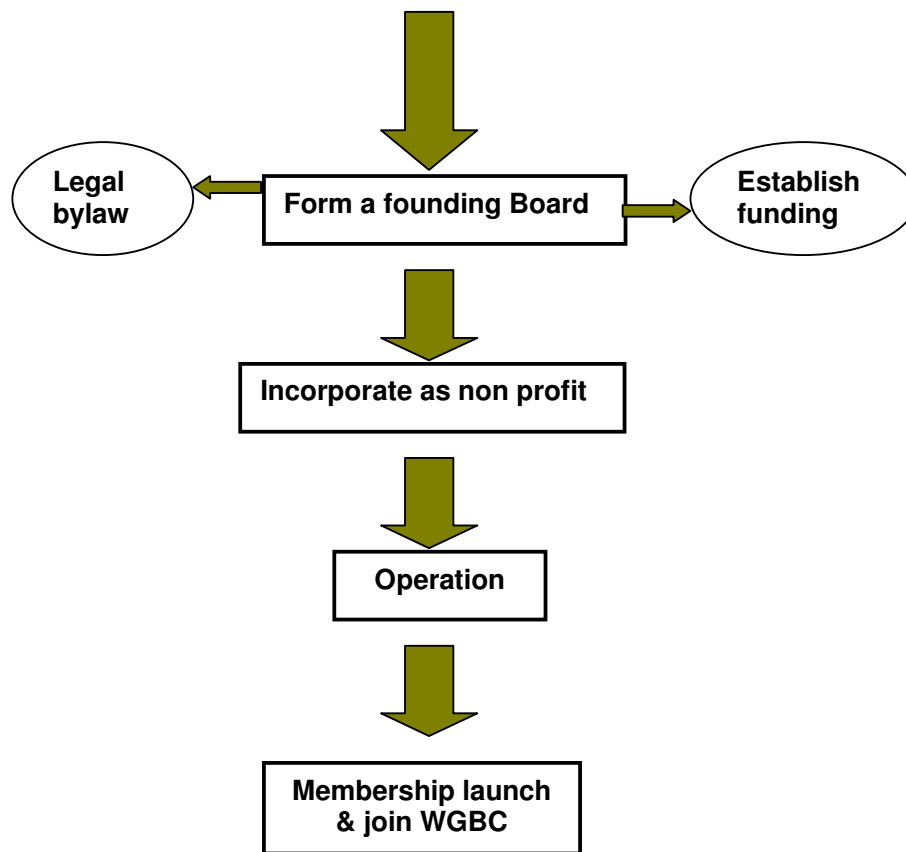
Pros	Cons
Some are influential in building sector	Can take long time to form a leading group
Some familiar with existing building codes	Few experienced in NGO establishment
Familiar with building market sector	Volunteering may not be receptive to some
Some are ready to lead	Some may expect to be compensated
Some with knowledge of green buildings	Establishing JGBC can take long time



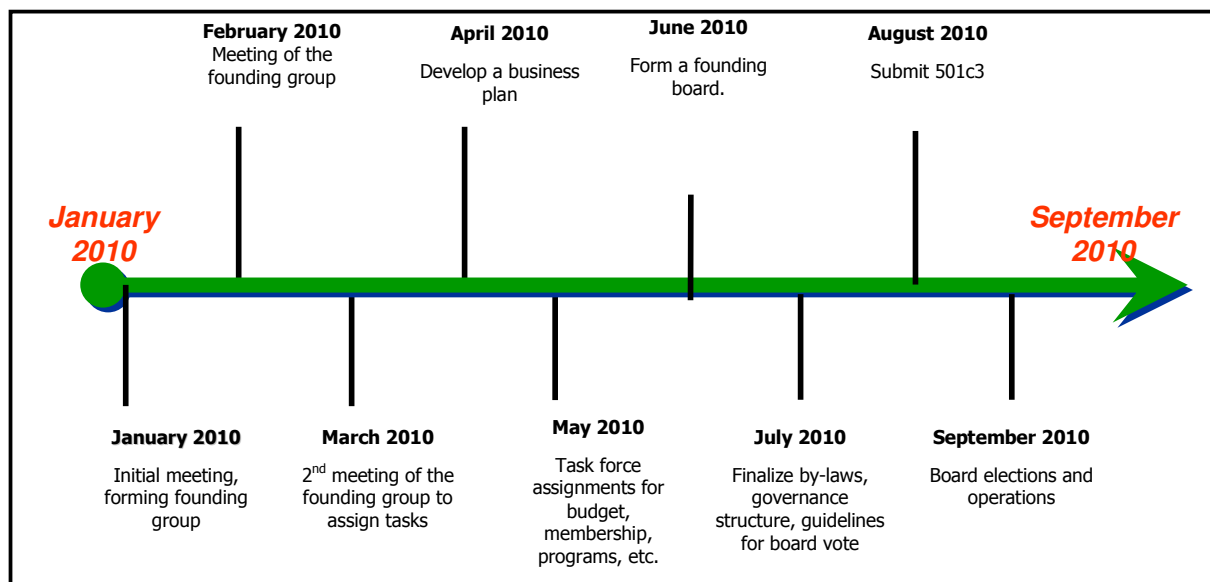
Interested stakeholder can join effort and work together to reach a common goal



Note: these groups can be invited, but if they do not show up, then whoever attends participate in forming the group. Of course they can join committees and volunteer at any time there after as members, but not founding group. Again, I see here the A/E group will be taking the



Timeline:



Outreach Programs: this is part of programming and education committee task:

Local and national outreach:

1. Announce the initiative, press release and other PR.
1. Hold town meetings to take your message to the public.
2. Engage colleges and university students immediately.
3. Sponsor green design competitions among university students.
4. Provide scholarships and sponsor students to green building events.
5. Start engaging K-12 schools, visit schools and work with the teachers.
6. Join other organization and make alliance with them.
7. Participate in programs and events with other organizations.
8. Schedule LEED training.

International Outreach:

1. Apply to become World Green Building member. See World Green Building membership road map at www.worldgbc.org .
2. Attend Greenbuild international in November, an annual U.S. Green Building Council conference, visit www.usgbc.org .
3. Approach USGBC to adopt LEED.

ACTION PLAN:

- **Implement phase I recommendation per proposed timelines.**
- **Implement phase II as follows:**
 1. Moving forward with scenario #1 because it is the most efficient and effective way. There is an urgent need in Jordan for the services that JGBC will be offering. We know that you will not be JGBC right away but you are working toward that. After the first meeting you have you will be “JGBC organizing group” until you get your 501C(3). So call your group that.
 2. A/E Business Council to schedule a meeting and invite all stakeholders to attend (see figure 1) in this report. This way you have given them the chance to participate in the process. Please give at least a week notice for the meeting.
 3. This will be a historical moment, so take photos of the meeting and take meeting minutes, which will be posted on your website as thing progress. You need to keep track of events.
 4. The process of forming JGBC per timeline for scenario #1 can take about eight month, but you can start functioning and providing the immediate needed services to the public after your first founding group meeting. These services include training and development, recruiting founding members (these are top ten companies that will support the organization), making connections with policy makers, etc.
 5. Start your outreach programs locally and internationally and let it be heard that you are on the radar and coming up strong and effective.
 - a. Make an official contact with WGBC and let them know of your activities. They can provide a great deal of support to you too.
 - b. Make an official connection with USGBC.
 - c. Plan on sending few members to Greenbuild conference.

6. After the first founding group meeting, have a press release, post adds on TV, radio, and news papers.
7. Develop a website for the JGBC organizing group with calendar of events and regular meeting
8. Follow the timeline proposed in this report or set your own time line that you feel you can accomplish tasks at hands.
9. The timeline that I provided should be used to accomplish milestone and **to measure the group's performance** with. A monthly report to be provided to report the accomplishments and progress on each miles stone.

CONCLUSION:

Establishing JGBC is a much needed organization in Jordan that will bring

the Triple Bottom Line home focusing on conserving natural resources, revitalize national economy with green building market, and care about people's well being. All three aspects are closely related, intertwined if you will. Society depends on the economy while the economy depends on the environment.

JGBC will be formed in the very near future depending on the path that will be taken. Earlier in this report three scenarios were stated based on existing green building movement in Jordan. The first model will be the most efficient and less time consuming to utilize to form JGBC because the A/E Business Council is already an established organization, its members are well versed in the NGO formation, members are willing to volunteer and willing to work with others, and can start immediately with out learning curve. This is important to the expedition, establishment, and the success of the JGBC because the public is already seeking local support, guidance and information on how to develop, design and build green in Jordan. The time is of essence here. Every day counts.

The joint venture model is acceptable too, but it will be very time and energy consuming. Again a group and individual from the proposed group for this scenario have to step forward and take the initiative to form the founding group. This can be done, but it can take a long time, and from my observation Jordan does not have time b/c developers are coming into the country to development and the construction market is thriving. Forming JGBC can set the stage for the green development in the country.

Please note that in every model, I have included government officials to be invited (it is up to them to attend). These officials can participate as individual professionals to join committees and volunteer. They play a critical rule in making thing happen. So their participation will enhance the formation of the JGBC. They know the ins and outs of how issues related to development and construction can be done. With their support, codes and requirements can be adjusted to meet the green development in Jordan.

I respectfully disagree with individuals stating that individuals from government do not need to be involved with formation of JGBC because these individuals are professionals in this market, they have influence in making change, they can be passionate about the environment, and they want a sustainable Jordan. Therefore, they can make valuable members of JGBC.

To measure the progress of this initiative, the education committee within the green building unit is to monitor the activities and report to the board.

I wish the best for SABEQ in its leadership and initiative to support the Green buildings effort in Jordan that will position Jordan strategically in this new world order to save energy, water and the environment.

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