

Construction in Palestine

Indoor Sports Hall

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Summary

The construction sector plays a very significant role in Palestinian society development. It provides better living conditions, develops social and cultural life, and even creates more jobs opportunities.

This paper introduces the Palestinian Economic Council for Development and Reconstruction – Job Creation Program, which was established in 1994 after Oslo agreement between PLO and Israel. This paper also introduces one of the most important projects in Palestine, which is the construction of the first two indoor sports halls in Gaza Strip. These projects provided young people and women with opportunities to participate actively in economical, political, social, and cultural life.

The following presentation illustrates these two projects according to the course main subjects, which consider the facts about each project, the design stage, the production stage, and the property management stage. It is also necessary to define the role of each actor in the construction process and emphasise on the need of continuous co-operation between them.

Introduction

Aim of the paper

It is found very important to follow the objectives of the course (International Construction Management) to write this paper, knowing and understanding the professional role of each actor through the construction process in its different stages.

I have chosen an indoor sports hall as a project in my country to show the process of planning and construction in Gaza Strip, as a case study, in which different stages of project preparations and implementation will be included. My paper will also include the new experience, which is gained through the course lectures, discussion, and the materials, which are provided.

Sport Participation in Palestine

Women in Palestine society have not generally had the same opportunities as men to be involved in many aspects of the development of the country. From employment to participation in sport, recreation and cultural activities, women's participation has been limited by traditional values and custom. There was, and there is still a particular need for centres, which will serve the sport and recreational activity of women.

It is also found that the 1,000,000 inhabitants of Gaza Strip, 46% of them are under the age of 18. The political isolation the youth have faced under Israeli occupation and continuous closures imposed on the Gaza Strip leaves them with little exposure to outside ideas, customs and cultures, even within the Arab region. Leisure activities (cinemas, theatres, etc.) for youth in Gaza are almost non-existent.

This lack of social and recreational facilities force the youth to entertain themselves on the streets. With current estimates that the population of Gaza will double in the next 15 years, the problems of the youth will grow worse.

This can only be reversed by providing women and youth with the opportunity to participate actively in the economical and political, as well as social and cultural life through sport, art, theatre, etc. This process of promoting active participation of women and youth in the social, cultural and economical life of their communities is vital for sustainable development and for good and lasting peace.

Basic Country Information

Palestine

Palestine is a Middle Eastern country on the eastern coast of the Mediterranean Sea in which it bridges the three continents of Europe, Africa, and Asia. Palestine combines a rich and an ancient history with a diverse and a fascinating culture and it is also the only place in the world considered holy to Christians, Muslims, and Jews.

At recent history, Palestine was occupied partially by Israel after 1948 war and totally after 1967 war. In September 1993 a Declaration of Principles (Oslo Agreement) was signed by Israeli Government and Palestinian Liberation Organisation (PLO) in which Israeli withdrawal from Gaza Strip and West Bank should be completed in five years and Palestinians can start a limited autonomy on these lands during this period and declare an independent state after that. Unfortunately 40% of the lands were transferred to the Palestinian Authority up till now and State of Palestine is not declared yet.

It is very hard to find the exact number of Palestinians because most of them are still living all over the world outside Palestine, but most of studies calculated them as more than 6,000,000 in population. There are four seasons in Palestine. Winter is mildly cold and rainy while summer is usually hot and dry. Autumn is pleasant and spring is beautiful with wide array of wild flowers and blooming trees. Average temperatures range from 9-18 C in winter and 26-30 C in summer. Arabic is the official language in Palestine. English is widely spoken, while Italian, French, and German are spoken to a lesser extent.

Gaza Strip

The Gaza Strip is a coastal area along eastern Mediterranean Sea with a total area of 365 sq. km. It was a part of the British Mandate from 1917 to 1948 in which Egypt controlled it until 1967 Arab Israeli War. The total population of Gaza Strip is more than 1,000,000, and more than 40% are still living in refugee camps. The Gaza City is the largest city in Gaza Strip with a population of 360,000. It is not only an ancient historical city, but also it is one of the oldest cities in the world. The name (Gaza) associates with dignity, honour, and strength. Some said that the name meant treasure or fortune. The name Gaza had its own old calendar which started about 60 BC.

Facts about the Actors

First Donor:	The Government of Norway
Second Donor :	The Government of Sweden
Monitoring Agency :	United Nation Development Program (UNDP)
Implementation and Consultation :	Palestinian Economic Council for Development And Recon. PECDAR—JCP
Owner :	Ministry of Youth and Sports (MOY&S)
Designer :	Arabesque Group for Engineering (AGE)
1 st Contractor :	El-Ghouti Sons Company
2nd Contractor:	Ataa Sons Company
Permission :	Gaza and Khan-Yunis Municipalities

Design Stage

Project Organisation

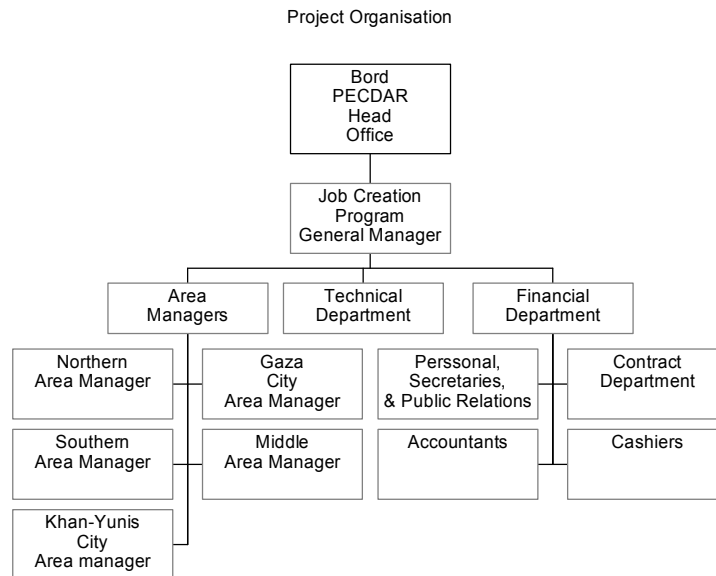


Figure 1: PECDAR's Organisation Chart

The role of **PECDAR** is to play as a mediator between the Donors and the Palestinian ministries and municipalities in which the main objectives of PECDAR role are:

1. Prepare a work plan for the project, propose dates of money advances, review project documents and drawings (which are usually submitted by a design office) ,and prepare a monthly progress report to the UNDP
2. Point out an area manager to follow up with the design and the production stages which includes management, cost estimation, bidding, consultation with site supervision, and co-ordination of all construction activities
3. Select an acceptance committee to turn over the project to the ministry or to the municipality and follow up with the one year maintenance period

The role of the **UNDP** is mainly financial and operational monitoring and reporting services, transfer payments to PECDAR from the Donors. Their role also includes site visits, review the monthly reports, and to prepare quarterly technical and financial reports to the Donors.

The role of the **MOY&S** is to prepare a land for a project construction, participate in the design stage in which they have to carry out a soil test for the land under PECDAR monitoring through an engineering laboratory, and prepare their technical needs (size of the building, number of offices needed, number of washrooms, the dimensions of the playground, etc.) to the designer and to PECDAR. Finally they participate in the acceptance committee to take over the building and then be responsible for the operation and the maintenance of it.

The role of **Gaza & Khan-Yunis Municipalities** is to give the permission to build such a building at the right spot according to city laws and an official layout map and then supply the site with the infrastructure needs like water lines, electrical power, and roads with sidewalk construction.

Pre Design Stage

In January 1996, the Government of Norway confirmed to PECDAR the transfer of 2,500,000 USD through the UNDP account in Gaza to use part of it (650,000 USD) to build an indoor sports hall some where in Gaza Strip. PECDAR contacted the MOY&S and discussed this matter with them and both sides had a hard time at the beginning to find the right place for this project. Gaza Strip has two major cities,

Gaza City and Khan-Yunis City, and both cities have an urgent need for an indoor sport hall. Finally, the decision was taken to construct two sports halls with basic needs and so find another donor later on to donate such amount of money to continue the construction. PECDAR contacted the UNDP for this reason and they found out that the Government of Sweden was ready to transfer an amount of 300,000 USD to complete the construction of these two sports halls. So the total amount of 950,000 USD was received through the UNDP and was transferred in four payments later on during the design and the production stages to PECDAR.

Purchasing / Procurement /Contracting Form

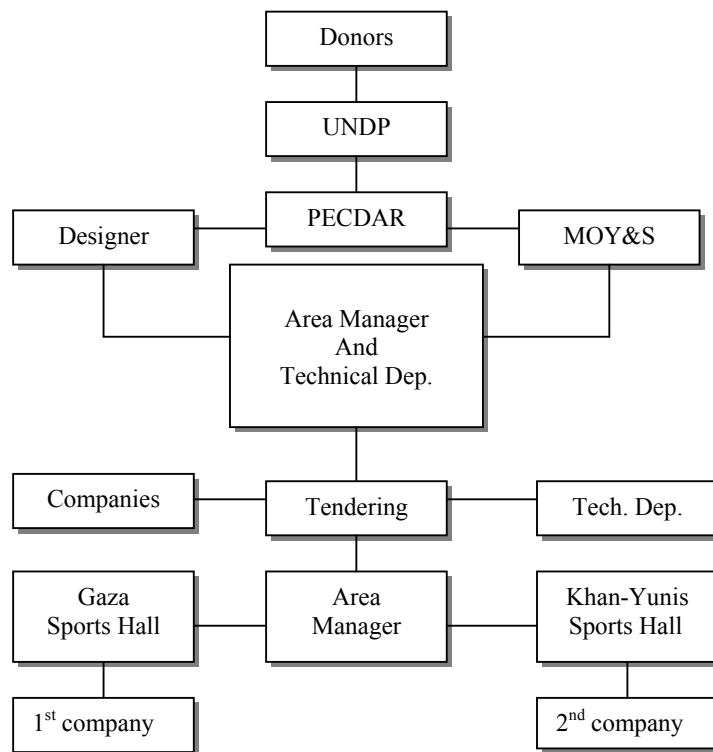


Figure 2: Tendering and Procurement Chart

In February and March 1996, PECDAR and MOY&S met many times to find the urgent needs of these two indoor sports halls and they have to find the perfect answers to these questions:

1. What are the best places in these two cities for a such project ?
2. What is the size of each hall and what should it include ?
3. How many people should be allowed to use these halls ?
4. What is the standard space specification for each sport playground ?
5. What is the size of the audiences to attend sport activities?

At the final meeting it was decided to build a 40 metres by 60 metres sport hall with a height of 10 to 11.5 metres (Figure 3&6) which should include:

1. Inside two floors administration building
 - First floor for players with all necessary needs
 - Second floor offices for the employees
2. A play ground area which has a size of 25 metres by 40 metres
3. The terraces in two sides which can take total audiences of 1,500 (Figure 4) with eight washrooms and four storage rooms under the terraces.

Later on, it was decided to release two tenders by the MOY&S under PECDAR monitoring for:

- Soil investigation
- The design (drawings & bill of quantities)

In May 1996, the permission to build these two halls were given to the MOY&S by the municipalities and the soil investigation result and the design were submitted to PECDAR for an approval.

The soil investigation test was made by the Islamic University soil test laboratory that included a report of various layers of three bore holes of each site encountered prior to the design.

The design was made by the AGE that included sites layout, architecture drawings, structural drawings, mechanical drawings, electrical drawings, fire fighting system, and the bill of quantities.



Figure 3: Gaza City indoor sports hall



Figure 4: West side terraces

Project Planning

PECDAR Technical Department prepared a work plan to execute the job with all needed cash flow through out the project. The work plan consisted of many tasks as follows:

Table 1: Project Planning

Task	Duration
Work plan	5 days
Study & approval of work plan	3 weeks
Soil testing & design approval	2 months
Prepare of tender document	10 days
Tendering	10 days
Studying of tender result & qualification	5 days
Mobilisation	10 days
Implementation	8 months

As it is seen from table 1, PECDAR could not prepare more longer time table because it was very necessary to complete all works as soon as possible and start with the construction stage not later than July, 1996.

Project Financing

The Government of Norway and the Government of Sweden are contributing 950,000 USD to finance the construction of the two indoor sports halls, which includes technical supervision, as well as the administrative and operational support cost, through a trust fund agreement. The project money was distributed as follows:

Table 2 : Project Budget

Task	Budget (USD)
Gaza City sport hall	375,000
Khan-Yunis City sport hall	375,000
Engineering services (designing,etc.)	20,000
PECDAR administration cost	30,000
Supervision	30,000
UNDP AOS	60,000
Contingencies	60,000
Total Budget	950,000

Budget and Budget Control

PECDAR's Technical Department and the Area Manager estimated the preliminary budget for each sports hall and specify the maximum cost for the designer before releasing the tender to control the budget during the design.

After the design and the bill of quantity were completed the Technical Department prepared the budget for the whole project and made an estimation based on the latest contractors unit rates and also prepared the money transfer scheme from UNDP to PECDAR .

Information Technology

For each project, PECDAR Technical Department open files where they attach the entire relative project documents, drawings, specifications, bill of quantities, estimated priced bill of quantity, contractor priced bill of quantity, monthly payment certificates and final payment certificate. These files are very essential to compare prices, and performing estimates.

Computer software is widely used, all drawings are drawn by AutoCAD release 14 and the bill of quantities is typed in Excel for budget control.

Conclusions

Planning is an important factor to control the construction of any activity to achieve the required goals. Co-ordination is a key factor from the start to the end of any project, so the deeper co-operation and co-ordination between different actors, the more success will contribute to the project.

Production Stage

Tendering and Contract

After the Technical Department finished preparation of all documents needed for tender, which consists of:

1. General conditions, basically governs the relation between PECDAR and the contractor.
2. General specifications for all PECDAR's projects.
3. Special specifications which was prepared by the designer.
4. Bill of quantities that includes all works needed on site.
5. Drawings with all details needed;

PECDAR advertised in the newspaper for two consecutive days in two different newspapers for 1st and 2nd class contractors (Contractors Union, and the Ministry of Housing yearly classify Palestinian contractors). Two tenders were released, seven

days apart, first one for Gaza City project and the second one for Khan-Yunis City project. A pre-bid meeting was held one week after bid release to answer all questions contractors might have, then the area manager also arranged site visits for both locations. One week after each meeting each tender was opened by a committee consisting of four PECDAR's area managers and the head of the contract department. After the contract department reviewed the bidder's offer and checked their calculations, they sent the bill of quantities of the lowest five bidder's to the technical department for price analysis, in which they prepared a report to the general manager who is the only person making the final decision according to the submitted documents. The price of the winning contractor with other contractor's prices of each bid was announced on PECDAR's board for a period of one week.

This next table will illustrate the break down the total price of each winning company according to their total estimation of each kind of work:

Table 3: Winning Contractors Prices

<i>Item</i>	<i>Work Description</i>	<i>Gaza City Company's Price USD</i>	<i>Khan-Yunis City Company's Price USD</i>
1.	Excavation and earth work	8,895	7,085
2.	Concrete work	108,570	110,760
3.	Masonry work	19,000	16,550
4.	Water proofing	500	300
5.	Joinery works	8,160	10,100
6.	Aluminium and metal work	15,700	32,570
7.	Plumbing & Sanitary work	15,780	10,478
8.	Finishing work	30,155	34,390
9.	Steel structure work	78,800	81,500
10.	Electrical work	27,623	17,975
	Totals	313,183.00	321,708.00

Two letters of acceptance were forwarded to each winning contractor, in which the scope of the works were defined, as well as the agreed contract price. Each contractor was invited to sign the contract and submit the required performance bond which usually 10% of the total price. The documents of the contract included the letter of acceptance, the agreement, specifications, conditions of contract, scope of works, bills of quantities and the drawings.

Production Planning

According to the agreement, each contractor should commence performance of works within 10 days after signing the contract and the work should be completed within eight months (not more than 240 days). At this stage, it was the area manager responsibility to show each contractor the way to start the work, in which each contractor was asked to submit the following items:

1. Contractor staff credentials
2. Contractor work plan and the bar chart
3. Arrange an office, on site, for PECDAR's supervision team

The following chart will explain all activities and time schedule for Gaza City indoor sports hall and it was submitted to the area manager by El-Ghouti Sons Company as a Bar Chart:

Khan-Yunis City project started on July 1st, 1996 and Gaza City project started on July 15th, 1996. There was a one month delay in both projects according to the political situation through September and October 1996, in which Gaza Strip border to Israel was forced to be closed and all export and import materials were stopped (military closure) and all contractors suffered during that time. PECDAR did not charged any penalties for this unexpected delay and the two contractors did not ask for any compensations.

Table 4: Gaza City Indoor Sports Hall Bar Chart

	Task name	Days	Start Date	July 1996	August 1996	Sep. 1996	Oct. 1996	Nov. 1996	Dec. 1996	Jan. 1997	Feb. 1997	March 1997
1.	Mobilisation	10	15.7	■								
2.	Excavations	8	25.7		■							
3.	Plane Concrete	8	3.8		■							
4.	Foundations	14	11.8		■							
5.	Columns Neck	14	25.8		■	■						
6.	Backfilling	8	10.9			■						
7.	Ground Beams	18	18.9			■	■					
8.	Columns	18	6.10				■		■			
9.	Ground Floor (PC)	8	15.10				■	■				
10.	Terraces	28	15.10				■	■				
11.	Block Work (20cm)	20	15.10				■		■			
12.	Block Work (10cm)	7	1.11					■				
13.	Water Proofing	7	5.1							■		
14.	Ground Slab	21	28.10				■	■				
15.	First Floor Slab	21	15.12						■	■		
16.	Tie Beams	14	20.10				■		■			
17.	Wooden Doors	24	20.10				■	■				
18.	Steel Doors	24	20.10				■		■			
19.	Aluminium Window	24	20.10				■				■	
20.	Sanitary Works	28	25.10				■	■				
21.	Internal Plastering	28	5.1							■	■	
22.	External Plastering	28	5.1							■	■	
23.	Terrazzo Tiles	14	20.1							■		
24.	Cement Tiles	14	20.1							■		
25.	Ceramic Tiles	14	20.1							■		
26.	Playground Floor	20	20.11					■	■			
27.	Roof Steel Structure	36	20.11					■	■		■	
28.	Paintings	20	1.2								■	■
29.	Electrical Work	28	15.12						■		■	
30.	Testing&Finishing	10	5.3.97									■

Quality Management

At the beginning of the construction, it was important to approve the contractor's technical staff at site. The minimum requirement for the technical staff was:

- One project engineer (civil engineer with at least 8 years of experience)
- One site engineer (civil engineer with at least 2 years of experience)
- Two foremen (diploma with at least 5 years of experience)
- One surveyor (diploma with at least 5 years of experience)

The organisation chart of PECNDAR technical staff on site was as follows:

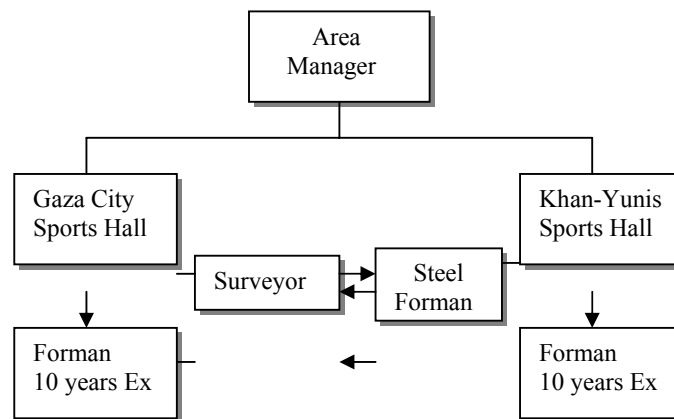


Figure 5: PECNDAR's Technical Staff on Site

Each contractor should get an area manager approval for each new material through a sample before he could supply it to the site. This sample was then tested in an approved laboratory for the conformity with specification and kept in the site for future reference. For concrete test, sample cubes were taken and tested at 7 and 28 days for conformity with specification. At the completion of each work, the contractor had to write a special form (request for inspection) to PECNDAR's site engineer for an approval. The work can not be continued without getting the site engineer approval.

Economic Control – Budget review and Reconciliation

It is the area manager's responsibility with close co-ordination with the technical department to look after the work progress, control the budget and try their best to keep the quantities as mentioned in the project document.

When the contractors signed the contract, all works were listed in the bill of quantity including the prices, but unfortunately in all projects there will be always a room for something missing, or miscalculations, or even a desire of the client to apply some changes that when things start to be visible in actual scale.

When variation orders occur, the area manager makes all estimations, and this order is given to the contractor for his quotation and then the area manager negotiates the price with him. When both parties agree on the price, PECNDAR's general manager shall approve this variation order.

In Gaza City project, there were five variation orders and three small tenders. When the contractor did not agree on PECNDAR's prices for three major works (Each one exceeded USD10,000), the area manager decided to release these three tenders to other contractors. These tenders were:

- Backfilling of the hole project area
- Out site boundary wall
- Plastic terraces chairs

PECNDAR's supervision team prepared a day to day progress report and weekly accumulative measurements of all works performed on each project. Also both contractors were have to submit daily report with all activities, labour content, machines content and the work progress to PECNDAR's site engineer in which daily check with the time schedule was made. It was the technical department responsibility to control the budget through the area manager reports and the monthly payment certificates. The final budget of each project was found to be as follows:

Table 5: Final Budget

Project Name	Final Cost (USD)
Gaza City Indoor Sports Hall	360,679.00
Khan-Yunis City Indoor Sports Hall	371,283.00

Conclusions

The more we can avoid variation order on any project, the more control we can make on the budget. It means if we spend more time in the design stage, we can minimise the final cost of any project through the production stage.

Property Management

Life Cycle Economy

The life of any building usually starts when the construction is completed, and ends when it is demolished. The life cycle economy starts when the owner starts to use and manage his property in which different issues shall be considered like: financing, running costs, maintenance, taxes and real estate. In the two projects we were taking about, little concerns were given to the running costs and maintenance, and the other factors were neglected.

The following items were taken in consideration during the design stage to minimise the running costs and the maintenance:

- Painting facades with three coats outside and inside to prevent humidity penetration
- Solar energy was used for heating water
- Electro galvanised steel sheets were used for the roof to reduce the need of maintenance which is very expensive for this kind of structure.

Maintenance Planning

It was mentioned in both contracts the full responsibility of each contractor for any maintenance needed during the first year. After the first year the MOY&S took the responsibility. The MOY&S has its own technical department in which they have their own maintenance planning. PECDAR policy is not to interfere in any maintenance plans after the first year.

In my opinion, it is wrong because the maintenance staff who is working for the MOY&S still needs more training and their financial support is almost zero. I think it is better to find a good financed investor who has a good experience in property management.

Connection to Design Stage

It is very important that the designers get the feed back of the project during its lifetime. It can help in:

- Preparing new designs
- Be more concern in reducing the running costs
- Reducing the need of maintenance by using different materials

PECDAR took advantages of building these two indoor sports halls in the requirements of the design of another two indoor sports halls for Jabalia and Al-Shatee Camps in Gaza Strip in which the constructions were completed in September 1999. Many specifications and aspects were changed during the design stage.

Conclusions

The success of any project relies on the success of all the three stages. As I mentioned before, the property management stage was given a little concern in my country in which more proper maintenance should be given to these two projects.

Experiences to be used in the future

- During the design stage, we had to make a very hard decision, that, should we construct one indoor sports hall with a complete work needed? It means, should it for example include:
 1. A/C conditioners

2. Rubber playground floor
3. Sound and heat insulation for the roof steel structure
4. Furniture
5. Use the highest material quality in the market

Or should we construct two indoor sports halls with an urgent work needed? We did not take in consideration the MO&S ability on future property management. We also thought that they could get more money through operating these halls and then complete the work.

- The success of any project relies mainly on the accumulative success of the three stages. The more time the design stage takes, the more saving on money we can make. The property management stage is very important for the life cycle of any project and the most important factors in the production stage are planning and quality assurance.
- The design of these two sports halls was changed many times during the design stage to reduce the cost of the construction. For example, the estimated total cost of each hall using I- beams trusses were about USD 550,000 in which it was less than USD 375,00 using welded pipes trusses.
- During the production stage, we had to release two tenders for these two halls. There was one week between them. When we opened the first tender for Khan-Yunis City project, the lowest price was known for second tender contractors (Gaza City project) in which most of them reduced their total price to be lower than the first tender price.
- The property management stage which is neglected in my country, is very important stage in Sweden and other European countries. We have to encourage the establishment of property management companies in my country, which can provide experienced management services.
- The most important goal of the course is defining the role of each actor on the project and then emphasis on the need of the co-operation between them. It was very important to me to understand the analysis of each stage and how they are connected to each other in Sweden in which I can compare it with Palestine construction process.



Figure 6: Outside view of Gaza City indoor sports hall



Figure 7: Inside view of Gaza City indoor sports hall