

**DATA COLLECTION SURVEY
ON URGENT RECOVERY
OF INFRASTRUCTURE
IN NORTH WESTERN IRAQ**

**FINAL REPORT
(Summary)**

October 2018

JAPAN INTERNATIONAL COOPERATION AGENCY

CROWN AGENTS JAPAN LIMITED

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Location Map of Target Areas of the Survey



Map No. 3835 Rev. 6 UNITED NATIONS
July 2014

Department of Field Support
Cartographic Section

Fig.1 Location Map of Target Areas of the Survey

(Source) Survey Team prepared based on UN website

(<http://www.un.org/Depts/Cartographic/map/profile/iraq.pdf>)

Abbreviations

| | |
|---------|--|
| EODP | Emergency Operation for Development Project |
| EODP-AF | Additional Financing for Emergency Operation for Development Project |
| FFES | Funding Facility for Expanded Stabilization |
| FFIS | Funding Facility for Immediate Stabilization |
| ICT | Information and Communication Technology |
| IDPs | Internal Displaced Persons |
| IOM | International Organization for Migration |
| ISIL | Islamic State of Iraq and the Levant |
| JICA | Japan International Cooperation Agency |
| KfW | Kreditanstalt für Wiederaufbau |
| PPP | Public Private Partnership |
| REFAATO | Reconstruction Fund for Areas Affected by Terroristic Operations |
| UNDP | United Nations Development Programme |
| UNOCHA | United Nations Office for the Coordination of Humanitarian Affairs |
| WASH | Water, Sanitation and Hygiene |

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Abbreviations

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1. Summary of the Survey

1. 1 Background of the Survey

The Republic of Iraq has suffered severe damage to its socio-economic infrastructure as a cumulative result of the three wars since 1980. Furthermore, limitation on import and export due to economic sanctions that originated from the 1990 invasion of Kuwait and lasted until 2003 resulted in significant recession in the domestic economy in Iraq, causing brain-drain of many technocrats, engineers, and experts out of the country. Although efforts on reconstruction and development have been in progress with support from the international community since 2003 after the end of the war in Iraq, the seizure of significant territory by the Islamic extremist group Daesh (Islamic State in Iraq and the Levant) hampers these efforts as much of North Western Iraq, particularly the Tigris-Euphrates basin fell under its control and became largely inaccessible. Thus, Iraq whilst still making efforts on reconstruction and development, came to have a domestic conflict with the extremist militant group. The Iraqi Army, with the support of the US-led international coalition forces, recaptured Mosul in July 2017. This was a significant milestone as it is the second largest city in Iraq and was the largest Daesh base of operations in Iraq. The last main urban base for Daesh, Hawija, was retaken in October. This was quickly followed by the liberation of Al-Qaim and Rawa in November, both situated along the Syrian border. This represented almost the end of Daesh organized resistance capability within Iraq. The Iraqi government declared liberation of the entire Iraq from Daesh on December 9 and is mounting efforts for extermination of the remnants of Daesh, and recovery and maintenance of law and order. In February 2018, Kuwait International Conference for Reconstruction of Iraq was held in Kuwait and presented a framework of reconstruction and development for the coming ten years. On May 12, 2018, the fourth election of Iraqi Council of Representatives was conducted. The result of this election was determined on August 10 after recounting. As of October 2018, the formation of a Cabinet is in progress, following the formation of a coalition group and nomination of the parliament chairperson and the president.

On the other hand, the conflict with Daesh over the last three years has brought catastrophic damage to the society and economy of North Western Iraq. The population in Iraq amounts approximately to 38.8 million (April 2018, Iraq Investment Map 2018 by Iraq National Investment Committee), 8.7 million of which need assistance according to the August 2018 report from Iraqi office of United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA). Although the refugees and internally displaced persons (IDPs) are returning home after liberation from Daesh, approximately 1.92 million IDPs remain in the country according to the July 2018 report from Iraqi office of International Organization for Migration (IOM). In North Western Iraq, which used to be the activity area of Daesh, destruction of many of the basic infrastructures that are essential to the life of residents, such as electricity, roads and bridges, water and sewerage facilities, weakened the production activities, probably causing people to

live under extremely difficult conditions. Whereas more than four million refugees and IDPs have already returned home (July 2018, IOM), it is important that the residents feel the dividend of peace from the viewpoint of preventing revival and reexpansion of extremism so that early recovery and reconstruction of the basic infrastructures and stabilization of the residents' lives are urgently required.

JICA's cooperation for Iraq is based on the Country Development Cooperation Policy for the Republic of Iraq and focuses on four points: 1) Development and diversification of industries for economic growth, 2) Strengthening economic infrastructure, 3) Basic living infrastructure rehabilitation and 4) Strengthening governance. JICA has provided cooperation mainly through the ODA loan programs to assist the development of basic economic infrastructure such as electricity and transportation as well as water and sewage facilities, health, medical and communication which are directly linked to the people's daily lives. However, assistance in North Western Iraq has been limited compared with Southern Iraq, which was largely unaffected by the conflict with Daesh.

JICA is considering providing cooperation through ODA loan projects and/or other assistance to contribute to the recovery and reconstruction for the areas seriously affected by the conflict with Daesh in North Western Iraq. This Survey has been conducted to check on physical damage and needs of assistance in North Western Iraq to identify candidate projects in JICA's view of the mid-term assistance planning for the recovery and reconstruction of Iraq.

1.2 Objective of the Survey

The objective of the Survey is to collect and confirm the basic data and relevant information about damage to infrastructure and needs of recovery and reconstruction in the areas seriously affected by the conflict with Daesh. The major survey items are as follows:

- (1) The policy and plan of recovery and reconstruction of Iraqi government
- (2) Damages to basic infrastructure
- (3) Needs for recovery and reconstruction on basic infrastructure
- (4) Status of the assistance by major donor countries and international development agencies
- (5) Identify candidate projects for JICA cooperation by Yen Loan assistance

1.3 Outline of the Survey

(1) Target organization for the Survey

The target organizations in this Survey are as follows:

- a) Reconstruction and development policy
 - Ministry of Planning
 - Reconstruction Fund for Areas Affected by Terrorist Operations (REFAATO)
 - Sector Ministries
 - Ministry of Electricity
 - Ministry of Construction, Housing, Municipalities and Public Works

- Ministry of Health
- Ministry of Education
- Ministry of Higher Education and Scientific Research
- Ministry of Water Resources
- Ministry of Communication

b) Basic data of damages and needs to basic infrastructure

Sector Ministries and their directorate offices

c) Major donor countries and international development agencies

USA, Germany, UK, World Bank and United Nations Development Programme (UNDP)

(2) Target area of the Survey

North Western Iraq where most affected by the conflict with Daesh;
Anbar governorate, Ninawa governorate, Kirkuk governorate and Salah ad-Din governorate

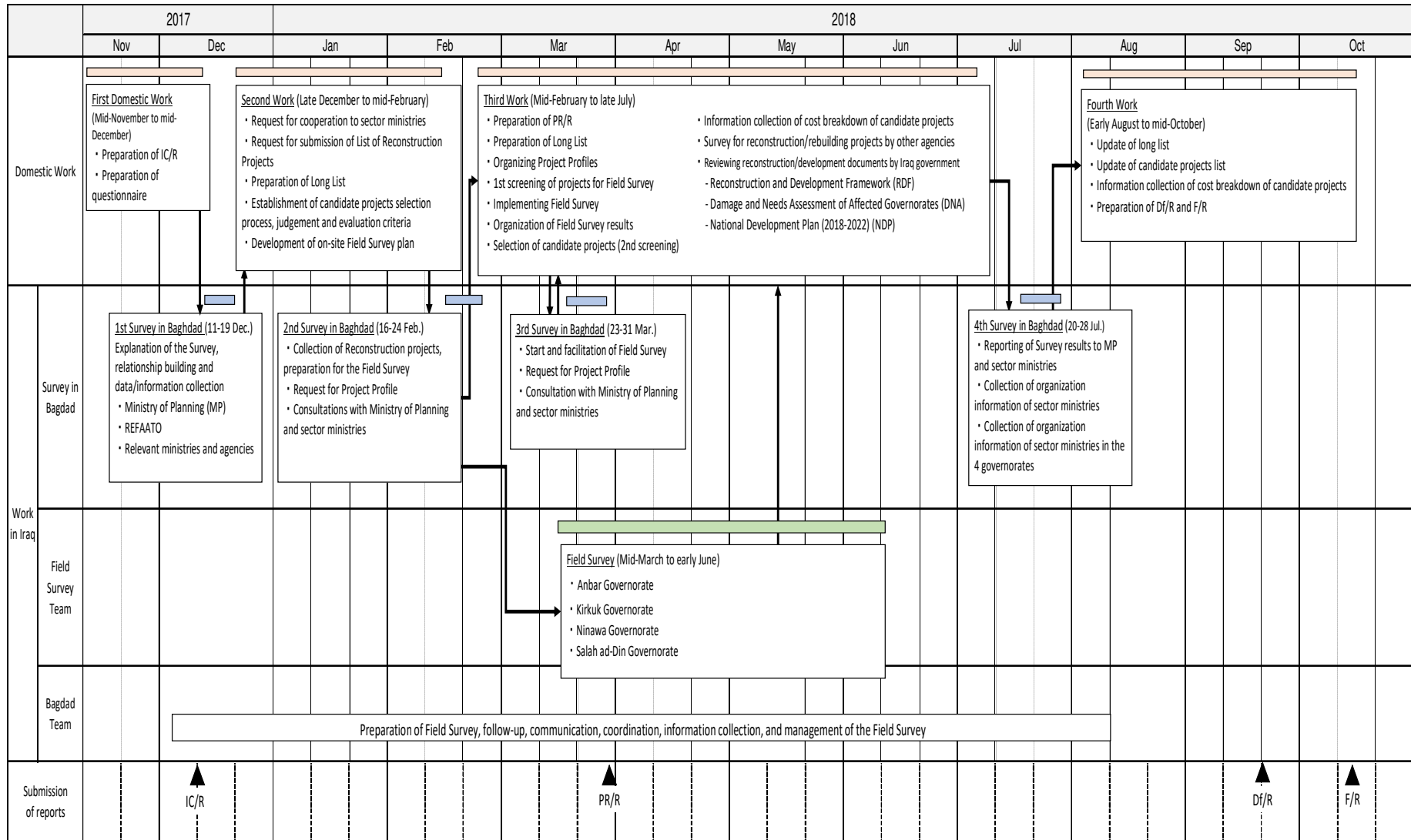
(3) Target sector of the Survey

The target sectors are the following seven sectors.

- Electricity
- Roads and Bridges
- Water and Sewage
- Health and Medical
- Education
- Irrigation
- Communication

1.4 Period of the Survey

The period of overall stages of the Survey is from the middle of November 2017 to the end of October 2018. In the initial plan, the period of the Survey was scheduled until the end of April to avoid the influences of the fourth election of Iraqi Council of Representatives, which was assumed to be conducted in May 2018. However, the project period was extended twice to the end of October (first time: extended to the end of August, second time: re-extended to the end of October) due to four main reasons: 1) It had taken time to obtain proposed projects from the sector ministries; 2) No alarming incident occurred in terms of safety in the survey area even during the election period so that securing of safety can be expected in conducting the field survey if sufficient precautions are taken; 3) New projects were proposed one after another from the sector ministries; and 4) It is hoped that as much field survey as possible is conducted to identify the situations of the fields and sites. Fig.1.4-1 shows the flow chart of the Survey.



Note: IC/R: Inception report, PR/R: Progress report, Df/R: Draft final report, F/R: Final report

Fig.1.4-1 Flow Chart of the Survey

1.5 Team of the Survey

The survey is carried out by eight consultants (including supporting personnel) of Crown Agents Japan. Survey team formation is shown in the Table 1.5-1 below.

Table 1.5-1 Formation of Survey Team

| Name | In Charge | Affiliation |
|---------------------------------|--|--|
| Koji Takamatsu | Project Manager/ assistance trend analysis | Crown Agents Japan Limited |
| Miho Hanai | Deputy Project Manager/ site investigation | Crown Agents Japan Limited |
| Shigeru Handa | Reconstruction and development plans | Crown Agents Japan Limited (Supported from Collective Platform, limited liability company) |
| Shingo Kikuchi | Recovery plans for infrastructure | Crown Agents Japan Limited (Supporting: Individual) |
| Seiichi Sasaki | Socio-economic analysis/ conflict prevention consideration | Crown Agents Japan Limited (Supporting: Individual) |
| Hanako Sato | Basic information collection/ administration | Crown Agents Japan Limited |
| Wissam Omar Nuri Fawzi | Local operation management/ reconstruction plan | Crown Agents Japan Limited (Supporting: Individual) |
| Osamah Mohialdeen Ibrahim | Local operation management/ reconstruction plan-2 | Crown Agents Japan Limited (Supporting: Individual) |
| James Blair | Local operation system building and administration | Crown Agents Japan (Supported from Crown Agents Limited) |

2. Reconstruction and Development of North Western Iraq

2.1 Policy of Iraqi Government for Reconstruction and Development

Daesh began to expand its activity zone inside Iraq from around June 2014, occupying an extensive area in North Western Iraq, resulting in the government of Iraq needing to confront this critical situation. When the major cities of Mosul, Fallujah, Tikrit and Ramadi came under the control of Daesh, the nation of Iraq faced a crisis of its own survival.

The government of Iraq began actions to counteract Daesh from August 2014 with the support of a coalition of the willing in which more than 20 countries participated including the U.S. Armed Forces, recapturing Mosul, the second largest city in Iraq in July 2017, and almost entirely clearing out Daesh from Iraq by the end of 2017. However, the military conflict with Daesh that lasted for more than three years resulted in the North Western region of Iraq sustaining a great deal of damage, and there were some three million IDPs in Iraq as of November 2017.

The government of Iraq established the Reconstruction Fund for Areas Affected by Terroristic Operations (REFAATO, organization under the Council of Ministers in accordance with article

28 of the fiscal 2015 Federal budget) in 2015 with a budget of 500 billion Iraq dinars (431 million U.S. dollars) with the objective of facilitating recovery of public peace, welfare and livelihood in the regions that suffered enormous damage during the conflict with Daesh, and reinforced the system to coordinate between the related ministries, and the donor countries and international development agencies, and promote the implementation of recovery and reconstruction projects. REFAATO is responsible for coordinating projects financed by loans from the World Bank (Total amount: 750 million dollars) and the KfW (Kreditanstalt für Wiederaufbau, German government-owned development bank) (Total amount: 500 million euros), as well as grant aid from Kuwait (100 million U.S. dollars) and equipment provision by China (9.2 million dollars). In addition, 152 fast-paced small-scale recovery projects were implemented in 2016 (20 billion Iraqi dinars, 17.2 million U.S. dollars), and 198 of these projects were implemented in 2017 (150 billion Iraqi dinars, 129.3 million U.S. dollars).

In terms of trends among international organizations in 2015 and after, the World Bank started the 350 million U.S. dollar Emergency Operation for Development Project (EODP) in June the same year, followed by the decision in November 2017 to implement the 400 million U.S. dollar Additional Financing for Emergency Operation for Development Project (EODP-AF). During the implementation process, REFAATO is responsible for coordination with the government organizations in each sector and project monitoring. Similarly, the UNDP launched the Funding Facility for Immediate Stabilization (FFIS) in June 2015. The funding facility which was started with 7 million U.S. dollars succeeded in raising more than 400 million dollars by obtaining contributions from 23 countries. As soon as the declaration of recapture from Daesh was made, emergency recovery support was provided mainly with activities that consisted of emergency response for the water, power and other basic infrastructure destroyed in this region, creation of employment of young adults, and the provision of funds to and the rehabilitation of schools, hospitals and other such facilities to enable restarting of operation. Based on the success of the FFIS, the Funding Facility for Expanded Stabilization (FFES) was established in April 2016 and is implementing support for continuation of the above emergency recovery support and returning of IDPs.

Launching of the campaign to recapture Mosul in October 2016 was used as an opportunity by the government of Iraq to establish operating procedures to facilitate the recovery of public peace, welfare and livelihood in the regions that suffered enormous damage during the conflict with Daesh while receiving humanitarian and recovery support from international community. The Ministry of Planning prepared the “Document of the General Framework of the National Plan for Reconstruction and Development of Damaged Governorates due to Terrorist and Military Attack (Draft)” which will be the foundation for the formulation of comprehensive reconstruction and development policy, and the decision was made at a cabinet meeting (Cabinet meeting decision number 259) for the Ministry of Planning to take a central role in proceeding with review of the reconstruction plan for regions that sustained damage during the conflict with Daesh. In accordance with this cabinet meeting decision, the Minister of Planning issued ministerial ordinance No. 4625 dated October 15th, this minister established a high-level committee on which

the minister serves as the chairman, and formulation of substantive reconstruction and development policy was started.

During the Kuwait International Conference for Reconstruction of Iraq that was held in Kuwait on February 12–14th, 2018, the government of Iraq announced a policy document entitled Iraq Reconstruction and Investment that consists of three compositions.

- First Composition: Reconstruction and Development Framework
- Second Composition: Damage and Needs Assessment of Affected Governorates
- Third Composition: Investment Opportunities and Reforms

The three compositions in this policy document are positioned as guidelines that direct planning and implementation of reconstruction and development by the government of Iraq over a 10-year period from 2018. From the standpoint of recovery and reconstruction assistance by means of government official development assistance, the following two compositions of the document are very important: Reconstruction and Development Framework and Damage and Needs Assessment of Affected Governorates.

The Iraq national budget for fiscal 2018 with a total amount of 8.8 billion dollars was issued in the official gazette on April 3, 2018. The respective ministries in each sector are playing a central role in planning and implementation of reconstruction and development, and work will proceed while efforts between the respective government organizations, and the donor countries and international aid organizations are coordinated by the Coordination & Monitoring Unit of the Executive Committee for Reconstruction and Development under the Higher Committee for Reconstruction and Investment.

2.1.1 Framework for Reconstruction and Development

The Ministry of Planning in Iraq announced the Reconstruction and Development Framework and Damage and Needs Assessment in February 2018 as guidelines leading to reconstruction and development from the damage due to the Daesh military conflict. Recovery plans are formulated and implemented in accordance with the policies in the Reconstruction and Development Framework. In addition, the Reconstruction and Development Framework is positioned in reciprocaion with the following three policy documents: Iraq Vision 2030, National Development Plan (2018-2022) and Strategy for the Reduction of Poverty (2018-2022). In particular, the third five-year National Development Plan (2018-2022) directs the basic policy for economic development, and due to the fact that it is for the same period as the first half of the Reconstruction and Development Framework which covers 10 years, it is positioned as an important policy document for the reconstruction and development.

(1) Reconstruction and Development Framework

The Reconstruction and Development Framework and Damage and Needs Assessment of Affected Governorates were formulated with the objectives of leading to recovery and reconstruction from the damage sustained due to the Daesh military conflict as well as development, and these two documents will be the backbone for the planning and implementation.

The time line covers the 10-year period from 2018 to 2027 and is positioned as providing consistency with the National Development Plan (2018-2022) and Poverty Reduction Strategy (2018-2022) during the five years after it starts.

(2) Vision and Policy

The following vision is stipulated at the beginning of the Reconstruction and Development Framework.

“The recovery and reconstruction of governorates affected by terrorist and military operations (Baghdad, Nineveh, Saladin, Al Anbar, Kirkuk, Diyala, Babil) as well as the reconstruction and development of indirectly affected governorates is a national mission and cause, and is necessary and essential to enable the Iraqi State to recover and flourish, to prevent the re-escalation of conflicts and relapse into violence, and to consolidate sustainable peace in a secure and stable environment for all Iraqis.”

Although the focal point for the target regions consists of areas that directly sustained damage or were impacted by the Daesh military conflict, it has been specified that governorates and regions which have similarly sustained indirect impact are target regions. The approach has been positioned with a viewpoint where the promotion of social interaction and peace building are important in order to eliminate structural causes of conflicts, in addition to reconstruction and development of the physical infrastructure. Furthermore, in order to effectively utilize the limited public funds, a strategy will be adopted of promoting collaboration with the private sector to proactively use Public Private Partnerships (PPP) as a means to break away from a petroleum dependent economy and leading to the creation of sustainable employment.

There are seven governorates that have been defined as being directly damaged or impacted: Baghdad, Ninawa, Salah ad-Din, Anbar, Kirkuk, Diyala and Babil. In the Reconstruction and Development Framework, the total amount of recovery and reconstruction needs in the seven governorates that sustained damage is estimated to be approximately 104 trillion Iraqi dinars (Approx. 88 billion dollars). The survey targets this time consist of four governorates: Anbar, Ninawa, Kirkuk and Salah ad-Din, which are included in the seven governorates that directly sustained damage in the Reconstruction and Development Framework.

(3) Basic Project Implementation Process

A plan will be prepared in accordance with the policies outlined in the Reconstruction and Development Framework based on the grasp of recovery and reconstruction needs obtained in Damage and Needs Assessment of Affected Governorates. The basic process from a grasp of the needs to formulation of projects and implementation consists of five key steps: 1) Understand the needs, 2) Develop a comprehensive recovery plan, 3) Build inclusive and resilient institutions, 4) Finance the recovery and 5) Implement recovery programs in a coordinated manner with high levels of accountability and transparency.

(4) Five Priority Fields

In preparation for strategic implementation of recovery projects, the following five fields have been positioned as Five Recovery Pillars which are to be given priority: 1) Governance, 2) Reconciliation & Peacebuilding, 3) Social & Human Development, 4) Infrastructure, and 5) Economic Development.

2.1.2 Needs for Recovery and Reconstruction

According to the Damage and Needs Assessment of Affected Governorates, the recovery needs in the seven governorates that suffered direct damage from the Daesh military conflict are estimated to be a total amount of approximately 88 billion U.S. dollars. In addition, although the scope specified in the Reconstruction and Development Framework is 10 years, the funding needs over the next five years are compiled in the Damage and Needs Assessment of Affected Governorates, with the funding needs for one year after commencement called Short Term, and the funding needs for the second to the fifth year called Medium Term.

The Damage and Needs Assessment of Affected Governorates is an evaluation that compares the conditions before damage due to the Daesh military conflict and the current situation, serving as a document that provides the foundation for formulation of policies, strategy and planning to lead to reconstruction and development.

The damage due to the Daesh military conflict and recovery needs are classified into 17 sectors and these respective sectors are further categorized into four sectors: Social Sectors, Productive Sectors, Infrastructure Sectors and Cross-cutting Sectors. Social Sectors consists of 1) Housing, 2) Health, 3) Education, 4) Social Protection and 5) Cultural Heritage and Tourism. Productive Sectors consists of 1) Agriculture, 2) Water Resources, 3) Industry and Commerce and 4) Finance and Markets. Infrastructure Sectors consists of 1) Power, 2) Oil & Gas, 3) ICT (Information and Communication Technology), 4) Transport, 5) WASH (Water, Sanitation and Hygiene) and 6) Municipal Services. Cross-cutting Sectors consists of 1) Governance and 2) Environment.

(1) Funding Needs for Recovery in 5 Years

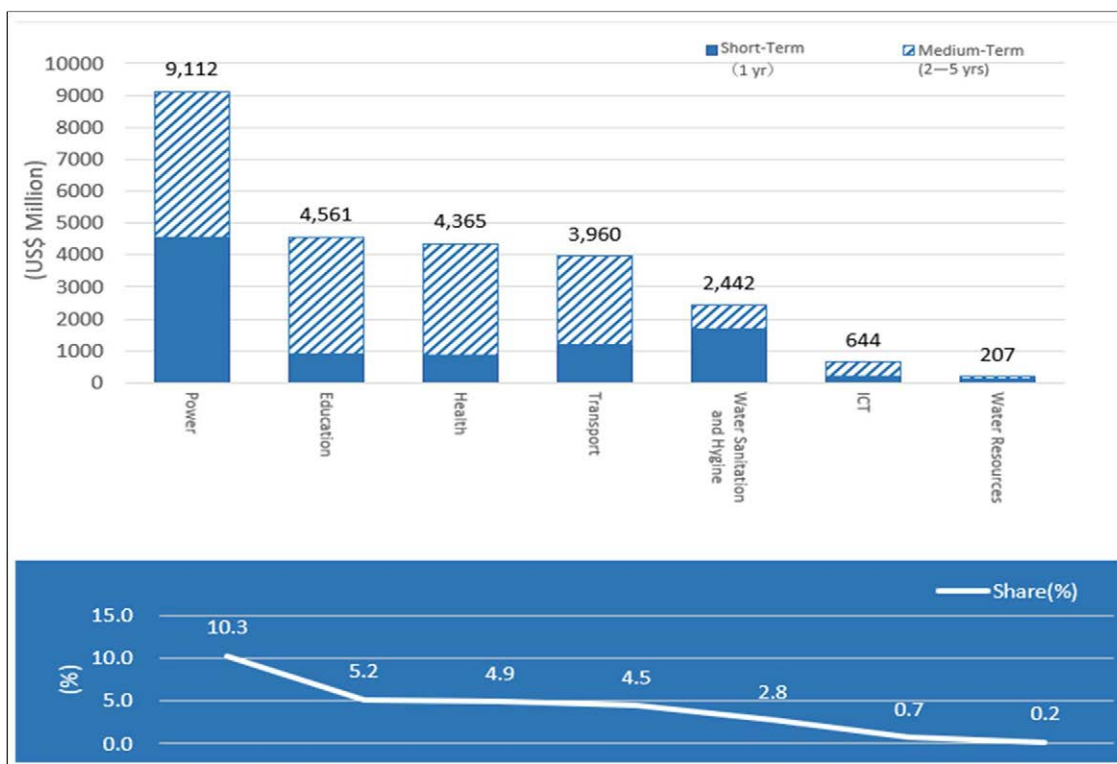
The total amount of needs in each of the four sectors consists of 34.5 billion U.S. dollars in Social Sectors accounting for 39.0%, 23.4 billion U.S. dollars in Productive Sectors accounting for 26.6%, 23.5 billion U.S. dollars in Infrastructure Sectors accounting for 26.6%, and 6.9 billion U.S. dollars in Cross-cutting Sectors accounting for 7.8%.

Out of the total amount of needs in the respective 17 sectors, Housing amounted to 17.4 billion U.S. dollars accounting for 19.8% in Social Sectors, Industry and Commerce amounted to 10.6 billion U.S. dollars accounting for 12.0% and Finance and Markets amounted to 9.3 billion U.S. dollars accounting for 10.5% in Productive Sectors, and Power amounted to 9.1 billion U.S. dollars accounting for 10.3% in Infrastructure Sectors.

The target sectors in this survey are listed below in the order of the total amount. In terms of recovery funding demand, Electricity (Power) is especially high, and Communication (ICT) and

Water Resources are at a low level of demand.

- 1) Electricity: 9.1 billion U.S. dollars: 10.3%
- 2) Education: 4.6 billion U.S. dollars: 5.2%
- 3) Health & Medical (Health): 4.4 billion U.S. dollars: 4.9%
- 4) Roads & Bridges (Transport): 4.0 billion U.S. dollars: 4.5% (Including airports/railway)
- 5) Water & Sewage (WASH): 2.4 billion U.S. dollars: 2.8% (Total of water supply and sewage)
- 6) Cimmunication (ICT): 600 million U.S. dollars: 0.7%
- 7) Water Resources: 200 million U.S. dollars: 0.2%



Source: Framed by Survey Team with data of Reconstruction and Development Framework

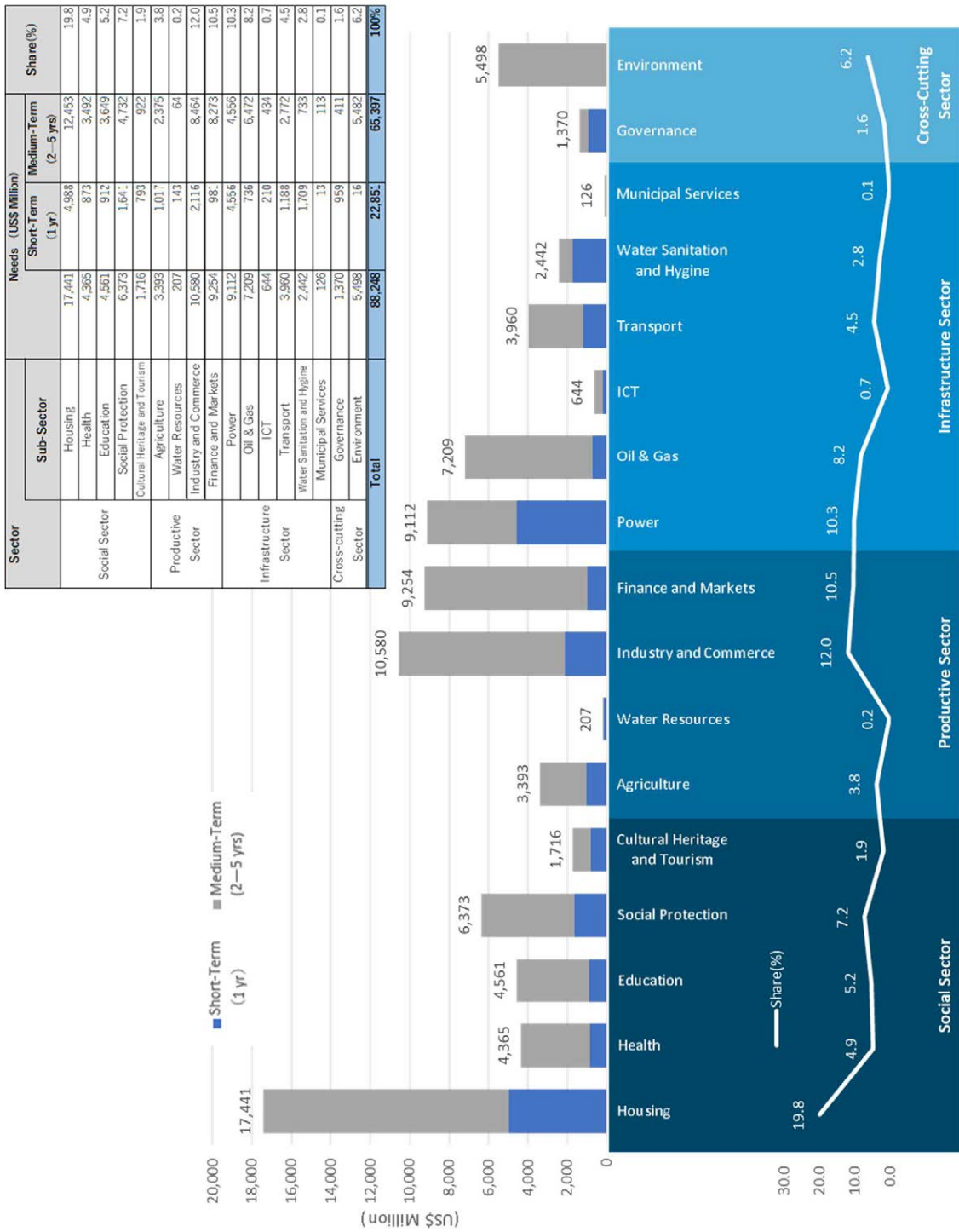
Figure 2.1.2-1 Five Year Funding Needs in the Target Sectors

(2) Short-Term Funding Needs (One year from start)

The short-term funding needs in Social Sectors amount to 9.2 billion U.S. dollars accounting for 40.3%, 4.3 billion U.S. dollars accounting for 18.6% in Productive Sectors, 8.4 billion U.S. dollars accounting for 36.8% in Infrastructure Sectors, and 1.0 billion U.S. dollars accounting for 4.3% in Cross-cutting Sectors. In each of the sectors, the funding needs for Housing in Social Sectors amounts to 5.0 billion U.S. dollars accounting for 21.8%, Industry and Commerce in Productive Sectors amounts to 2.1 billion U.S. dollars accounting for 9.3%, and Power amounts to 4.6 billion U.S. dollars accounting for 19.9% and WASH amounts to 2.4 billion U.S. dollars accounting for 7.5% in Infrastructure Sectors. While the amount required for Power is less than half that required for Housing in the five-year recovery funding needs, the level of short term funding needs for Power is almost the same level as Housing, enabling recognition that the funding demand in Power sector is high at an early stage during the recovery process.

(3) Medium-Term Funding Needs (Four years from second year to fifth year)

The medium-term funding needs in Social Sectors amount to 25.2 billion U.S. dollars accounting for 38.6%, 19.2 billion U.S. dollars accounting for 29.3% in Productive Sectors, 15.1 billion U.S. dollars accounting for 23.1% in Infrastructure Sectors, and 5.9 billion U.S. dollars accounting for 9.0% in Cross-cutting Sectors. In each of the sectors, the funding needs for Housing in Social Sectors amounts to 12.5 billion U.S. dollars accounting for 19.0%, in the production sector Industry and Commerce amounts to 8.5 billion U.S. dollars accounting for 12.9% and Finance and Markets amounts to 8.3 billion U.S. dollars accounting for 12.7% in Productive Sectors, Oil and Gas in Infrastructure Sectors amounts to 6.5 billion U.S. dollars accounting for 9.9% and Environment in Cross-cutting Sectors amounts to 5.5 billion U.S. dollars accounting for 8.4%. A comparison with the short-term funding needs indicates that the ratio of need Social Sectors and Infrastructure Sectors accounted for decreased, while the ratio of need by Productive Sectors and Cross-cutting Sectors increased. Environment which accounted for less than 1% of the short-term funding need accounts for 8.4% of the medium-term funding need. This is thought to be the fact that the increasing needs in Productive Sectors as well as Oil and Gas infrastructure recovery are linked to the increase in the demand for Environment in Cross-cutting Sectors. In addition, while the funding demand for Housing showed a slight decreasing trend, it remained around 20%, but on the other hand, the need for Power dropped from 19.6% to 7.0%. Regarding recovery of Power sector, it was found that this was given priority in policies at an early stage during the recovery process.



Source: Framed by Survey Team with data of Reconstruction and Development Framework
 Figure 2.1.2-2 Recovery and Reconstruction Needs by Sectors

2.1.3 Plan for Reconstruction and Development

In the Reconstruction and Development Framework, Five Recovery Pillars were formulated as fields that should be given priority in order to facilitate strategic implementation of recovery and reconstruction projects. These five recovery pillars consist of;

- First Recovery Pillar: Governance
- Second Recovery Pillar: Reconciliation and Peacebuilding
- Third Recovery Pillar: Social and Human Development
- Fourth Recovery Pillar: Infrastructure
- Fifth Recovery Pillar: Economic Development

Each recovery pillar is comprised of multiple sectors and recovery themes. The first recovery pillar of Governance consists of 1) Accountable and Responsive Institutions and 2) Equality and Fairness. The second recovery pillar of Reconciliation and Peacebuilding consists of 1) Cultural Heritage, 2) Security and Justice and 3) Trust and Reconciliation. The third recovery pillar of Social and Human Development consists of 1) Social Protection, 2) Health, 3) Education, 4) Environment and 5) Municipal Services. The fourth recovery pillar of Infrastructure consists of 1) Energy, 2) Water and Sanitation, 3) Housing and Accommodation and 4) Transport. The fifth recovery pillar of Economic Development consists of 1) Productive Capacities/Livelihoods, 2) Financial, 3) Commerce and Industry, 4) Macroeconomic and Fiscal and 5) Employment and Tourism.

The expected priority implementation items for each of sectors and recovery themes are categorized in the time line consists of three projections; Short-term Priorities: Activities conducted for one year from start, Medium-term Priorities: Activities conducted for three years from start, and Long-term Priorities: Activities conducted for five years from start.

Priority activities for each sector/recovery theme in each recovery pillar have been compiled in a table according to the above time line. When securing the project formulation, project selection and project implementation system, this document is the cornerstone indicator to ensure the appropriateness of the review, and each recovery pillar will be reorganized as described below while confirming the positioning and linkage of each respective priority implementation itmes.

Furthermore, the time line and correlation used for evaluation of sector damage/needs in the Damage and Needs Assessment of Affected Governorates is described below.



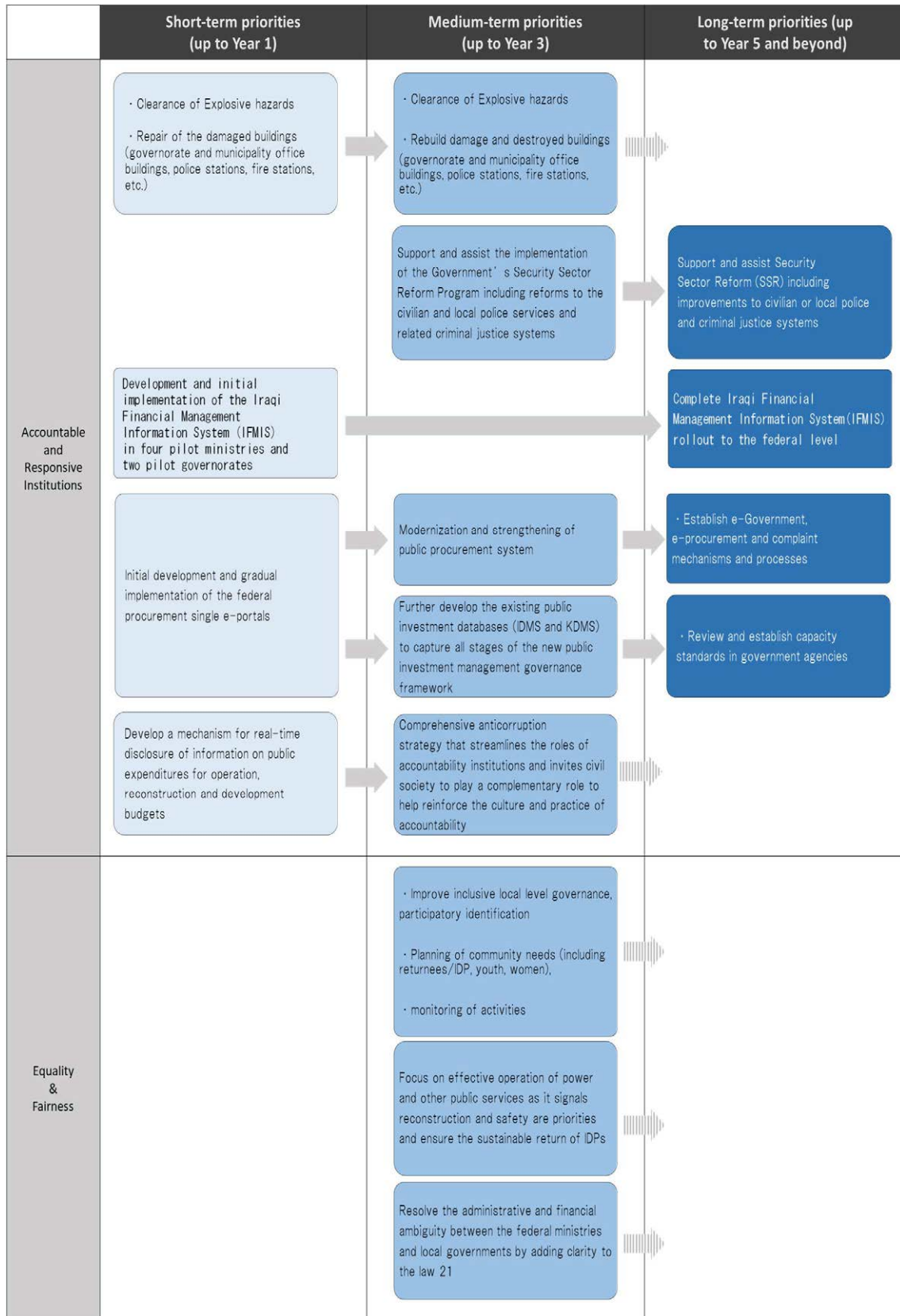
Source: Framed by Survey Team

Figure 2.1.3-1 Comparison of the Time Lines

(1) First Recovery Pillar: Governance

It has been clarified that Accountable and Responsive Institutions, e-Government will be promoted in addition to the recovery of official buildings, and resumption and improvement of public peace and justice. A strategy has been established to proceed with a transition to electronic systems for public finance management, public procurement, public investment and other such areas, open a government portal website and provide bidirectional communication functions with users in order to enhance transparency and accountability. The World Bank loan program started a project to modernize the public finance management system in December 2016, and it is thought that continuation/expansion of this project will be stipulated in the recovery plan. Compared to other recovery themes, priority activities have been specifically indicated.

In order to facilitate Equality & Fairness, it has been explained that decentralization of authority will be promoted, inclusiveness of local communities will be enhanced during policy and strategy dialogue, project formulation and implementation, and monitoring of public projects will be strengthened with the objective of strengthening the recovery of communities, providing support for livelihood, and promoting the return of refugees and IDPs. These are all designated as Medium-term priority items.



Source: Framed by Survey Team with data of Reconstruction and Development Framework

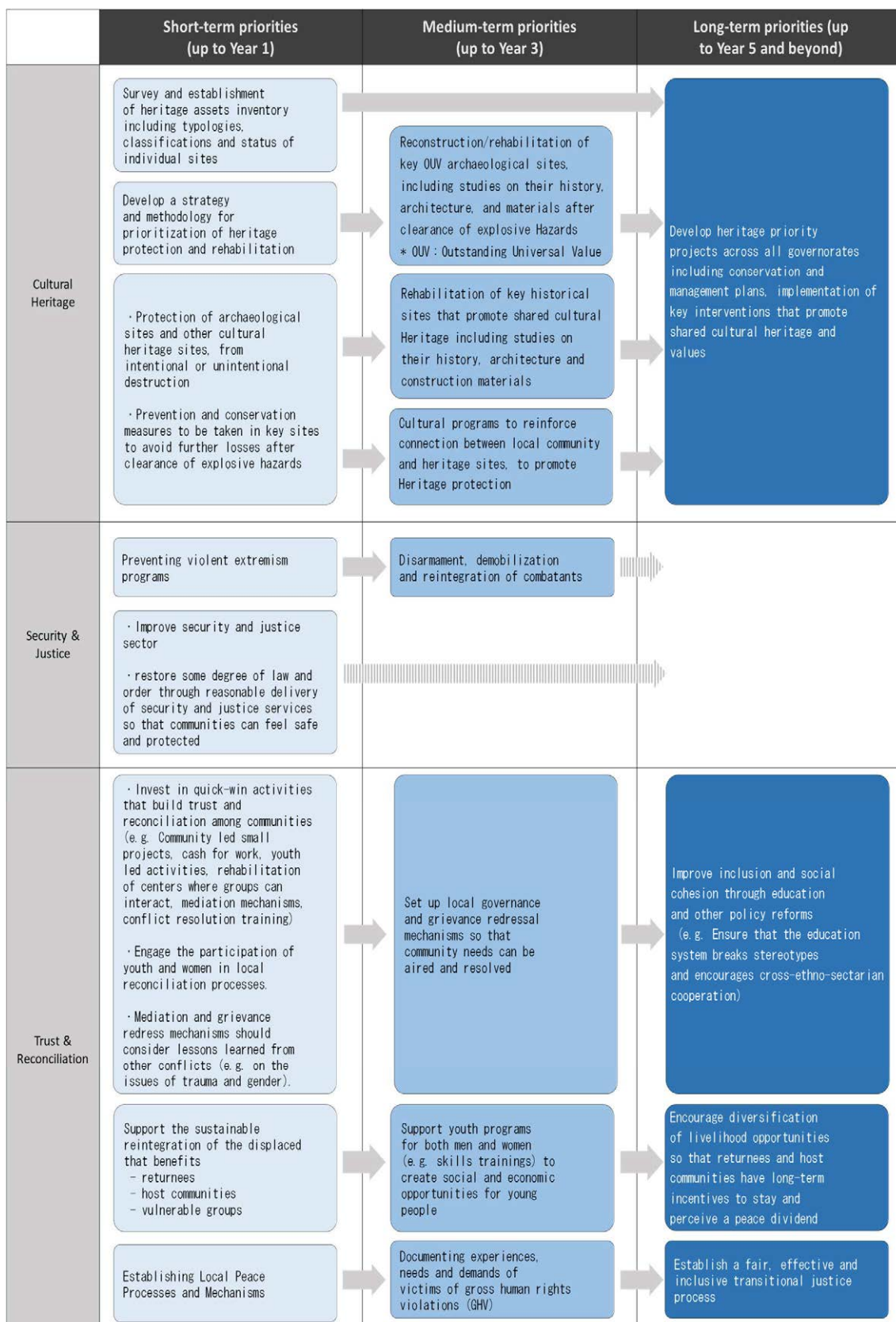
Figure 2.1.3-2 Suggested Priorities in First Recovery Pillar

(2) Second Recovery Pillar: Reconciliation & Peacebuilding

For Cultural Heritage, a specific strategy has been outlined of preparing an inventory for recovery and facilitating registration of world heritage sites as a means to create policies to promote the tourism industry. A strategy has been expressed where high hopes are placed on cultural assets in order to nurture a shared consciousness among the people of Iraq and in turn promote reconciliation and peacebuilding.

Security & Justice was also stipulated as part of the first recovery pillar and are positioned as priority activities for both the pillars of Governance and Reconciliation & Peacebuilding. It can be understood that a timeline has been projected in which the prevention of violent extremism and restoration of public peace and justice (in the second pillar) will lead to the reform of the public peace sector (in the first pillar). Furthermore, implementation of disarmament, demobilization and reintegration into society of ex-combatants has been specifically clarified as Medium-term priority items.

During Trust & Reconciliation, the focus will be on mediation, resolution of discontent, reconciliation, reintegration of refugees and IDPs and other aspects of autonomous governance in communities and the recovery/strengthening of social nature. It is hoped that the young people will serve this role, and a direction has been indicated for the diversification of livelihoods by means of vocational training as well as for Long-term education and judicial reform.



Source: Framed by Survey Team with data of Reconstruction and Development Framework

Figure 2.1.3-3 Suggested Priorities in Second Recovery Pillar

(3) Third Recovery Pillar: Social & Human Development

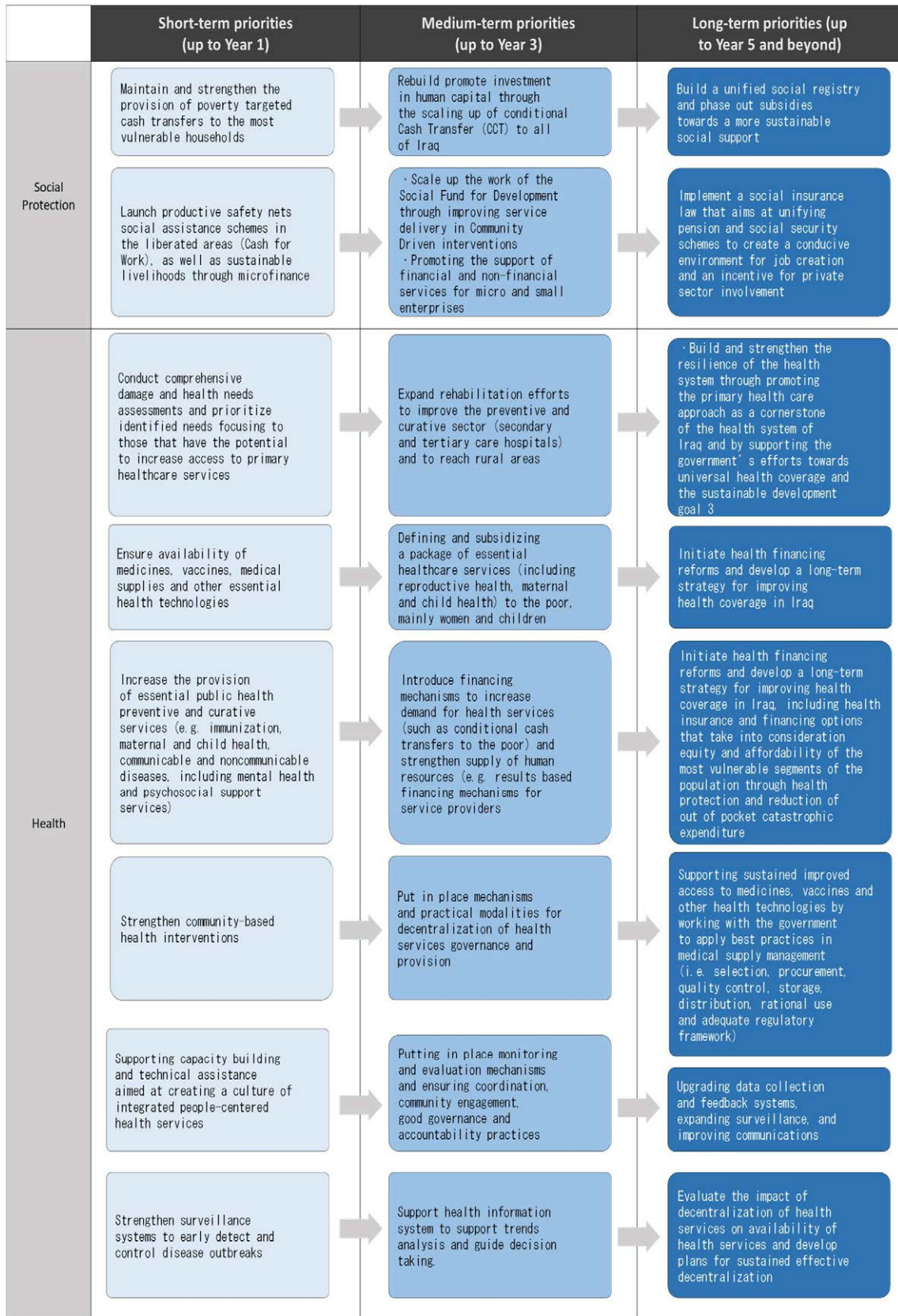
In the area of Social Protection, a strategy has been outlined in which the role of mutual assistance by communities will be promoted while maintaining protection and assistance of vulnerable people by the nation, leading to the enactment of a social insurance law and the establishment of a private insurance sector over the Long-term. In addition, a strategy has been expressed to decrease the number of people needing social protection by providing livelihood support with micro-financing over the Short-term, transitioning to support for small to medium sized companies over the Medium-term, and promoting involvement of the private sector over Long-term priority items.

For the Health sector, a direction has been indicated of providing health/medical services for recovery needs, expanding the information management system including surveillance, encouraging participation in health/medical financing by the private sector, and promoting the decentralization of health/medical administration. Providing health/medical services for recovery needs, repairing/reconstructing facilities, securing/supplying medicines, boosting capacity and providing support for farming regions and the poorest segment of the population have been designated as the Short-term and Medium-term priority items. Regarding the basic infrastructure, obtaining a grasp of damage to facilities and prioritization have been designated as Short-term priority items, and the repair of secondary or tertiary health/medical facilities have been designated as Medium-term priority items. Expansion of the health/medical information system has been designated in the same manner as for the education sector. As a result, there is a strong awareness of the need to create an information management system in accordance with e-Government promotion policy.

In the Education sector, a direction has been designated of providing education services for recovery needs, expanding information management systems and promoting vocational training. The specific Short-term priority items consist of repairing/reconstructing facilities, securing/supplying equipment and materials and boosting capacity. The Medium-term priority item consists of expanding the education information management system.

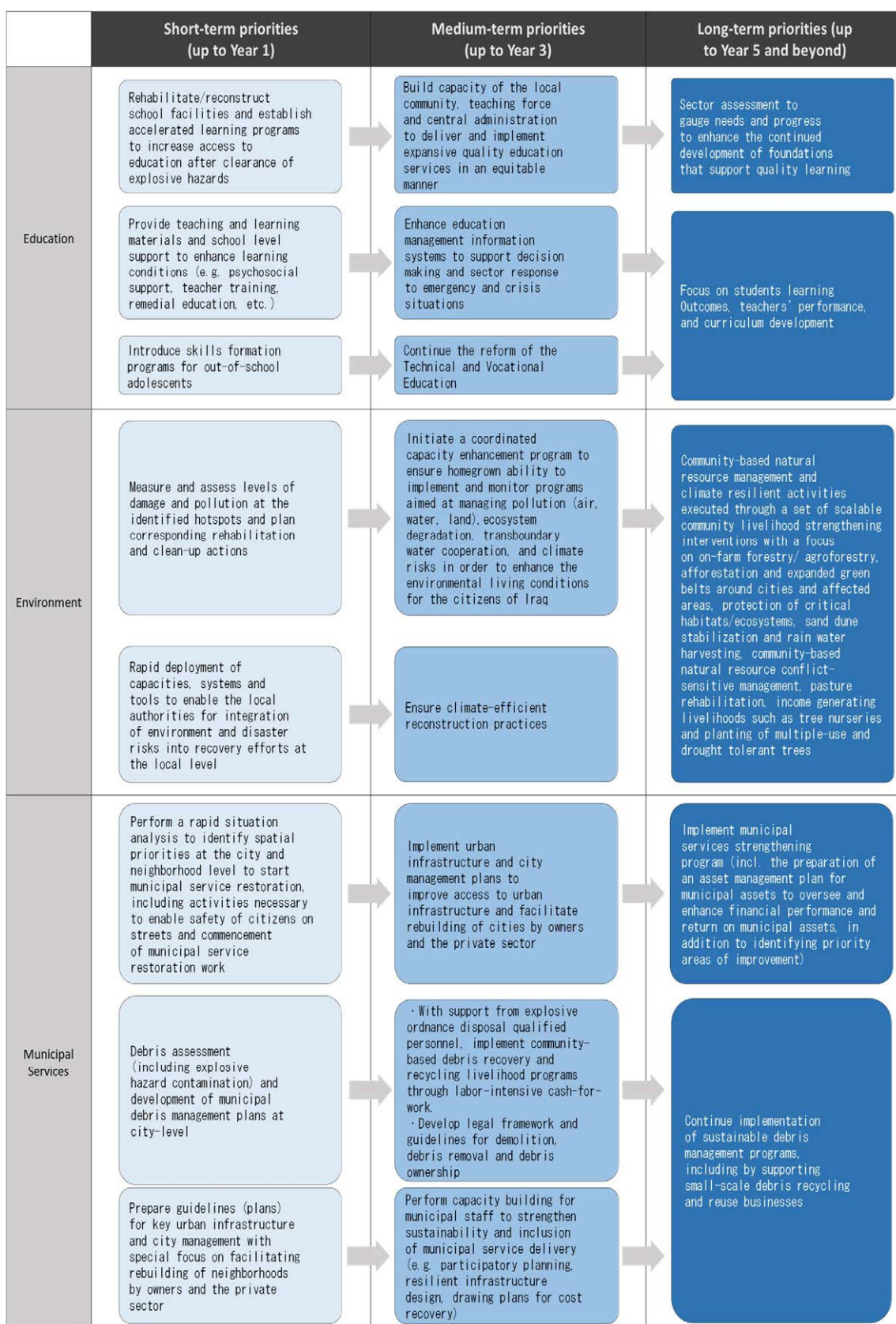
In the Environment sector, obtaining a grasp and of the damage status and performing decontamination, increasing capacity of environmental administration and responding to disasters and the risk of climate change have been designated as the Short-term and Medium-term priority items.

In the Municipal Services sector, obtaining a grasp of the damage and implementing repairs and rebuilding, promoting participation of the private sector, boosting capacity and disposing/recycling of rubble are designated as the Short-term and Medium-term priority items.



Source: Framed by Survey Team with data of Reconstruction and Development Framework

Figure 2.1.3-4 Suggested Priorities in Third Recovery Pillar (1)



Source: Framed by Survey Team with data of Reconstruction and Development Framework

Figure 2.1.3-5 Suggested Priorities in Third Recovery Pillar (2)

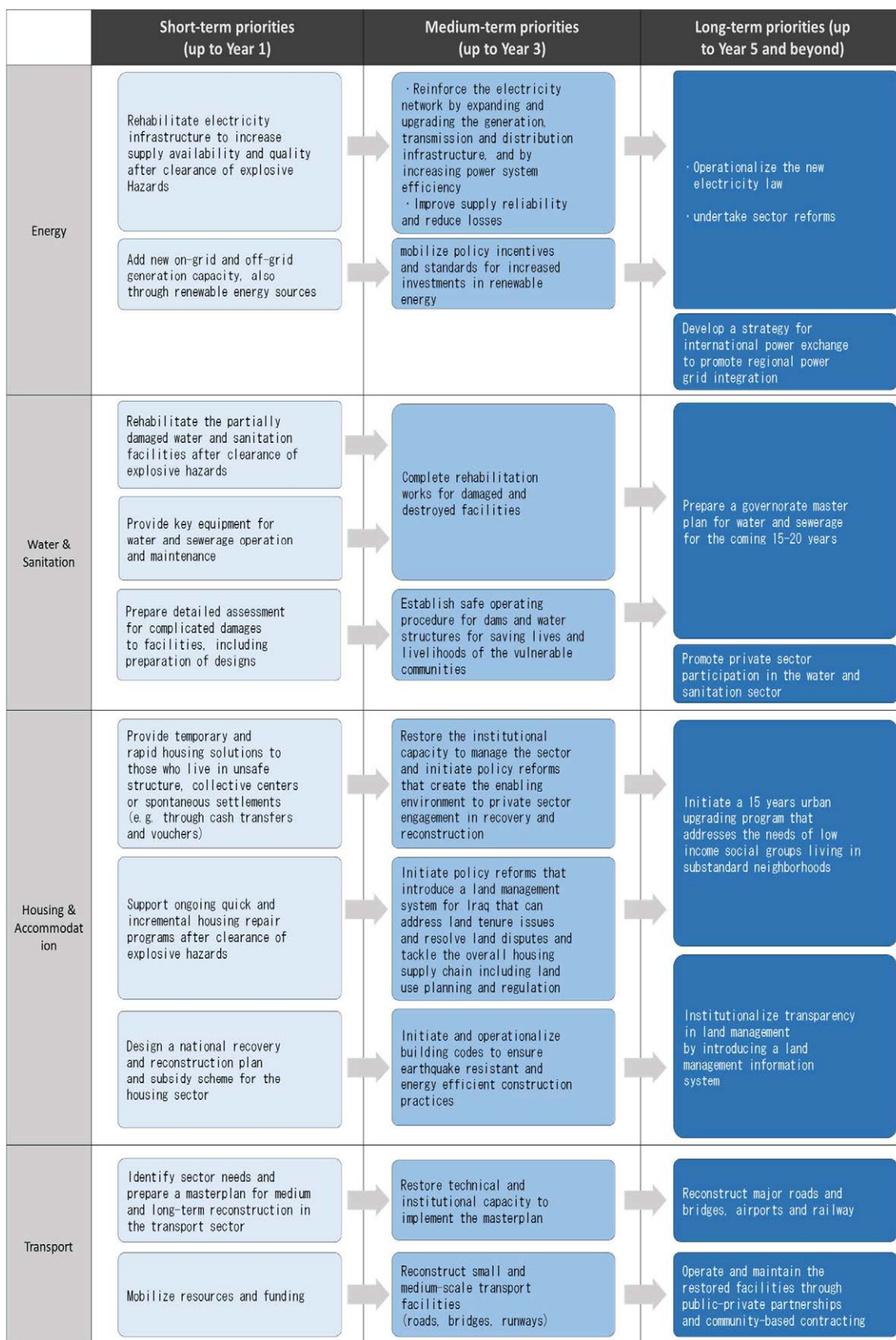
(4) Fourth Recovery Pillar: Infrastructure

In the Energy sector, repair and rebuilding of electricity infrastructure and expansion of electric power plants, transmission lines and the distribution network as a means to securing adequate distribution volume and boosting efficiency are designated as the Short-term and Medium-term priority items. In addition, the introduction of renewable energy, and application of policy incentives to encourage business have been stipulated, implying that these are strategic priority items.

In the Water & Sanitation sector, the repair of water supply and sewage facilities and provision of equipment and materials required for the operation and maintenance of existing facilities are designated as Short-term priority items, and completing repair work for water supply and sewage facilities is designated as a Medium-term priority item. Formulation of a governorate master plan of reconstruction and development for the next 15-20 years and promoting participation of the private sector represent Long-term priority items.

The Housing & Accommodation sector is positioned at the highest level in terms of demand and priority for recovery needs. Repairing and increasing housing and accommodation are urgently needed, and consists of a Short-term and Medium-term priority item. In addition, the introduction of a national information management system has been designated as a Medium-term priority item. In the same manner as for the Health sector and Education sector, there is a high level of consciousness in the government concerning the utilization of an information management system.

In the transport sector, reconstruction of small-scale and medium-scale transport facilities has been designated as a Medium-term priority item, and the reconstruction of major roads, bridges, airports and railways has been designated as a Long-term priority item. The preparation of a master plan for the transport sector has been stipulated as the Short-term and Medium-term priority items. In addition, application of PPP and a management subcontracting system have also been stipulated as Long-term priority items.



Source: Framed by Survey Team with data of Reconstruction and Development Framework

Figure 2.1.3-6 Suggested Priorities in Fourth Recovery Pillar

(5) Fifth Recovery Pillar: Economic Development

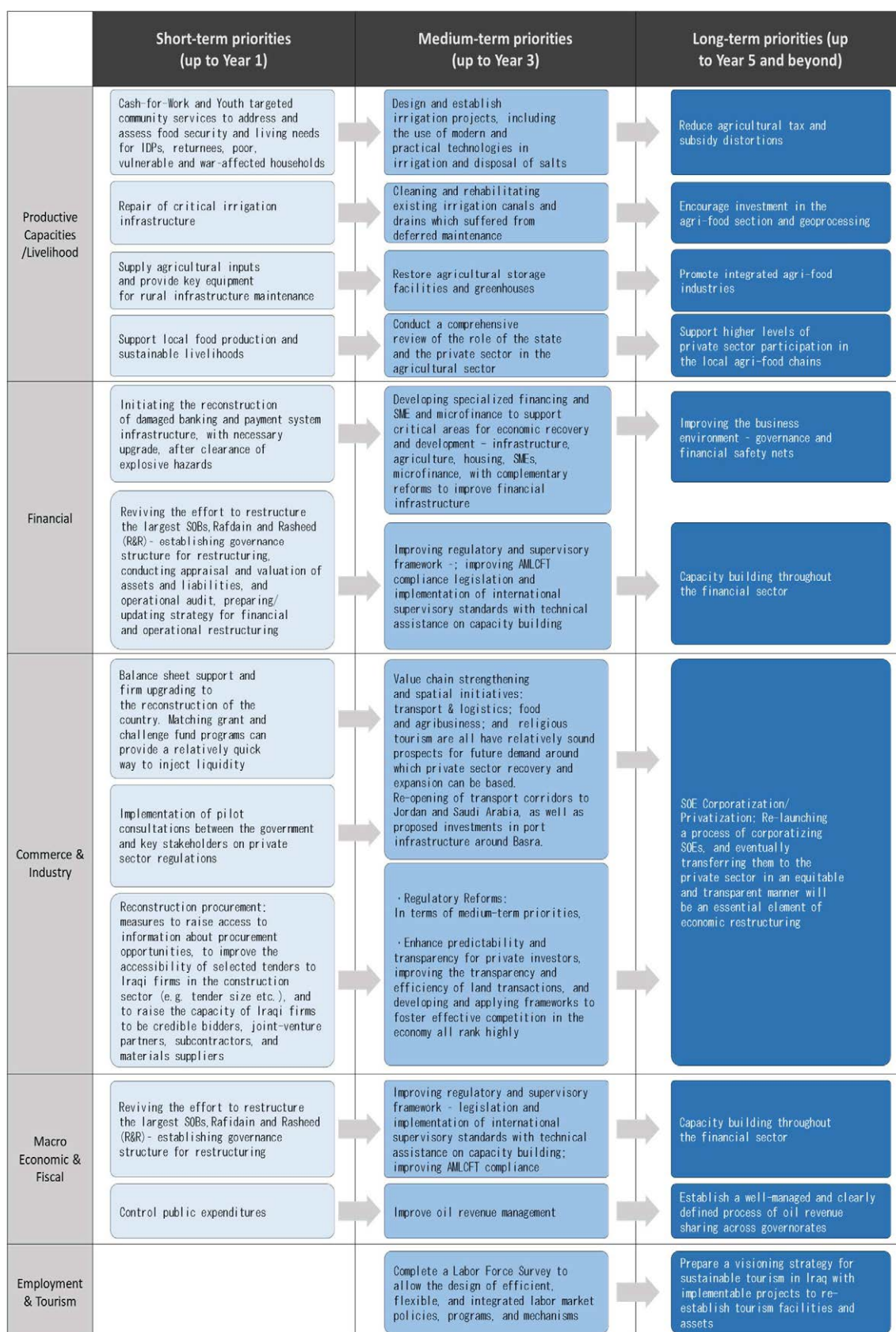
In the area of Productive Capacities/Livelihood, the irrigation sector has been included. The Short-term and Medium-term priority items cover repair of agricultural irrigation facilities and implementation of irrigation recovery projects. The theme here consists of livelihood support for returning refugees, the poorest segment of the population, socially vulnerable people and war-affected families, which consists of the concurrent perspectives of securing food in particular and agriculture recovery policy. The irrigation sector can be categorized as one for Cash for Work projects, since irrigation projects require labor-intensive work such as canal maintenance. In addition, promotion of a comprehensive agri-food industry which is a Long-term priority item is positioned as a core of the agriculture growth strategy in the National Development Plan (2018-2022) (agriculture is projected to experience 8.4% GDP growth).

In the Financial sector, infrastructure reconstruction related to bank services and privatization of government banks (Rafidain Bank, Rasheed Bank) are designated as Short-term priority items.

In the Commerce & Industry sector, support for corporate performance improvements, and utilization of public procurement (to stimulate Iraqi companies) and regulation reform have been designated as the Short-term and Medium-term priority items.

In the area of Macro Economic & Fiscal, privatization of government banks and regulation reform have been designated in the same manner as for the finance sector. In addition, control of public expenditures, increasing of petroleum revenue and distribution to each governorate have been stipulated as recovery themes.

In the area of Employment & Tourism, the promotion of tourism has been designated as a Long-term priority item. This configuration continues the policies to promote employment and tourism in the Cultural Heritage of the Second Pillar.



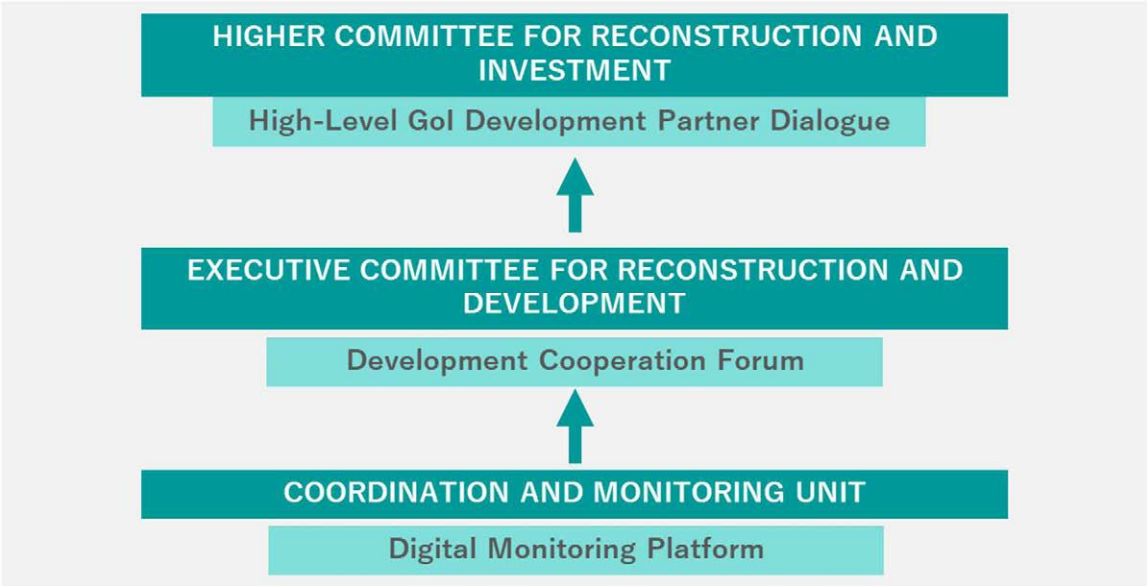
Source: Framed by Survey Team with data of Reconstruction and Development Framework

Figure 2.1.3-7 Suggested Priorities in Fifth Recovery Pillar

2.1.4 Implementation System for Reconstruction and Development Plan

The focus is placed on the importance of strengthening the implementation system and it is positioned as a priority activity in each recovery pillar, and it is worth notable that the importance of monitoring as an indispensable function has been emphasized. During monitoring and adjustment of actual projects, a participatory decision-making process will be used in which opinions are exchanged between the ministry in each sector and each governorate, civic society and other stakeholders from the project formulation stage. The fact that the importance of the implementation system is emphasized in the Reconstruction and Development Framework is characteristic.

A three-stage function division hierarchy structure has been stipulated when building the mechanism for decision making and overall adjustment of the recovery plan which consists of a Higher Committee for Reconstruction and Investment, Executive Committee for Reconstruction and Development, and Coordination and Monitoring Unit.



Source: Reconstruction and Development Framework

Fig.2.1.4-1 Implementation System of the Framework

(1) Higher Committee for Reconstruction and Investment

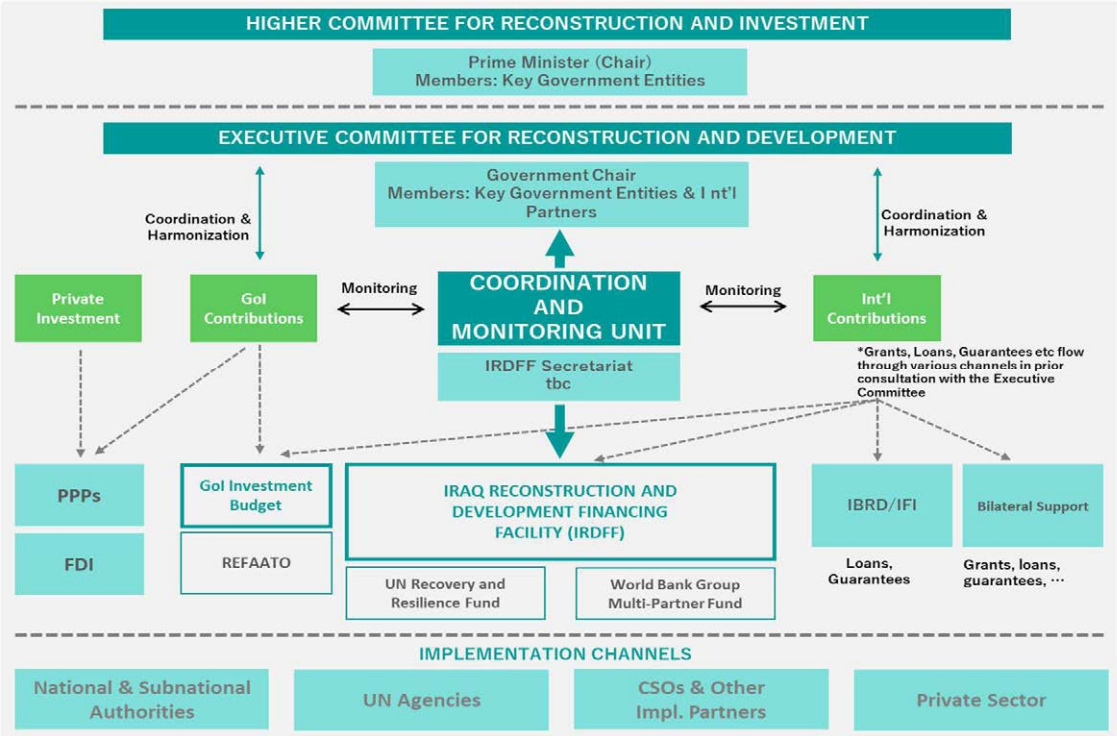
The prime minister is the chairman of this committee, on which ministers of each related ministry and governors or each related governorate serve as members to verify the progress and effects of the recovery plan and recommend the direction that policies should take in order to promote implementation of the recovery plan. High-level conferences will be held once a year with international development agencies and other organizations which participate in reconstruction/development, at which time discussions will be conducted on recovery plan progress reports and promotion activities.

(2) Executive Committee for Reconstruction and Development

The Secretary General of the Iraq Council of Ministers, Minister of Planning or Minister of Finance will serve as the chairman. United Nations agencies, the World Bank and other development partners will be invited to serve as members. The Executive Committee for Reconstruction and Development will formulate strategy, make adjustments between sectors and make decisions on recovery plan implementation based on the direction indicated by the Higher Committee for Reconstruction and Investment. In addition, this committee will manage operation and governance of the Iraq Reconstruction and Development Financing Facility (IRDF) which will be formed in the future, and be responsible for reviewing the necessity of funds and priority order, and loan allocation.

(3) Coordination and Monitoring Unit

The Coordination and Monitoring Unit serves the role of secretariat for implementation of the recovery plan. This unit will perform coordination between each ministry, donor, governorate and administrative district at the project implementation stage as necessary. In addition, it will perform monitoring of project progress. REFAATO will serve as a portion of this secretariat. The main roles of coordination between each agency, donor, governorate, administrative district and other related parties are diverse, and include promoting the sharing of information, management of the database for each recovery project, implementation of indicator monitoring through the database, making proposals to solve problems during recovery project implementation, and coordination between each agency, donor, local government and related parties.



Source: Reconstruction and Development Framework

Fig.2.1.4-2 Role of Coordination and Monitoring Unit

2.2 Summary of Target Areas

2.2.1 Area, Population and Density

Basic information of each of governorates in Iraq is introduced in the Iraq Investment Map 2018 published by National Investment Commission. The area and population of each of the four targeted governorates are shown in the table below and reckoned to come up with population density. Anbar, Ninawa, Kirkuk and Salah ad-Din governorates are situated in the North Western Iraq but each of governorates varies in its own quality.

Table 2.2-1 Area, Population and Density in the Target Governorates

| Name of Governorate | Area (km ²) | Percent (%) | Population (Persons) | Percent (%) | Density (Persons/km ²) | Comparison with Average of Density |
|---------------------|-------------------------|-------------|----------------------|-------------|------------------------------------|------------------------------------|
| Anbar | 137,723 | 31.4% | 1,796,557 | 4.6% | 13.0 | 14.7% |
| Ninawa | 36,515 | 8.3% | 3,793,982 | 9.8% | 103.9 | 117.2% |
| Kirkuk | 9,679 | 2.2% | 1,629,625 | 4.2% | 168.4 | 190.0% |
| Salah ad-Din | 25,807 | 5.9% | 1,615,924 | 4.2% | 62.6 | 70.7% |
| Subtotal of 4 Gov | 209,724 | 47.8% | 8,836,088 | 22.7% | 42.1 | 47.5% |
| Baghdad | 4,555 | 1.0% | 8,318,696 | 21.4% | 1,826.3 | 2060.8% |
| Republic of Iraq | 438,446 | | 38,854,563 | | 88.6 | |

Source: Framed by Survey Team with data of Iraq Investment Map 2018

Of the total area of Iraq, a ratio of 47.8% is comprised by 4 governorates. The total population accounts 22.7% and an average of population density of those 4 governorates is 47.5%, which is less than 50% when the national average is taken as 100%. The area of the Anbar and Ninawa governorate comprises 40% of the total area of Iraq, and the population density in Kirkuk is about 2 times higher than the nation average. The 4 governorates that suffered direct damage from the Daesh military conflict are all located north-west and geographically neighbours, however, each has different characteristics.

2.2.2 Status of IDPs

Total number of IDPs of 4 governorates in terms of origin, displacement and return as of July 2018 which was reported by IOM are as following the Table 2.2-2 below.

Total number of IDPs originally from 4 governorates and still being internally displaced is approx. 1.79 million which accounts 91.8% of 1.95 million, whole IDPs in Iraq. Especially, IDPs from Ninawa are approx. 1.15 million which accounts 59.0% of whole IDPs. The returnee population has reached at about 60% out of total IDPs borne in Iraq, however, a large number of people from Ninawa are still in

displaced.

Total number of IDPs who are stationed in 4 governorates is approx. 0.97 million which accounts 49.7% of whole IDPs stationed in Iraq. Approx. 0.6 million IDPs are displaced in Ninawa and this accounts 30.8% of total IDPs. The continuous retention of a large number of IDPs is a burden for local community and residents and it is regarded as a difficulty to promote social security and stability.

Total cumulative number of returnees to 4 governorates is approx. 3.62million which accounts 91.4% out of total 3.96 million returnees. Returnee's population to Ninawa is approx. 1.5million which accounts 37.9%. Securing livelihood and reintegration to the society would be challenges for increasing returnee population.

Table 2.2-2 IDPs and the Target Governorates

| Name of Governorate | Number of IDPs (Place of Origin) | Ratio by Total | Number of IDPs | Ditto % | Number of Returnees | Ditto % |
|---------------------|----------------------------------|----------------|----------------|---------|---------------------|---------|
| Anbar | 242,244 | 12.4% | 74,982 | 3.8% | 1,270,092 | 32.1% |
| Ninawa | 1,152,708 | 59.0% | 602,490 | 30.8% | 1,498,020 | 37.9% |
| Kirkuk | 146,688 | 7.5% | 124,668 | 6.4% | 296,718 | 7.5% |
| Salah ad-Din | 252,000 | 12.9% | 169,518 | 8.7% | 552,984 | 14.0% |
| Sub-total of Four | 1,793,640 | 91.8% | 971,658 | 49.7% | 3,617,814 | 91.4% |
| Baghdad | 29,664 | 1.5% | 90,852 | 4.6% | 76,878 | 1.9% |
| Others | 130,680 | 6.7% | 891,474 | 45.6% | 261,918 | 6.6% |
| Total | 1,953,984 | 100.0% | 1,953,984 | 100.0% | 3,956,610 | 100.0% |

Source: Framed by Survey Team with IOM Displacement Tracking Matrix July 2018

2.3 Damage of Basic Infrastructure

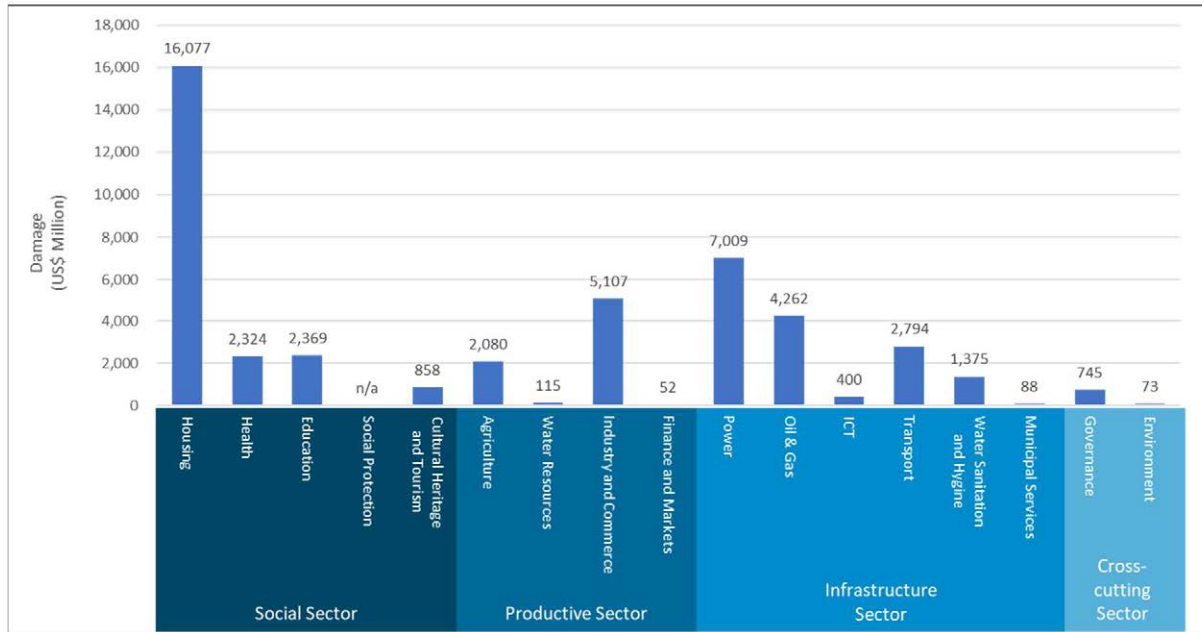
A mentioned in Damage and Needs Assessment of Affected Governorates, the damage for seven governorates that directly sustained damage due to the Daesh military conflict estimates the total amount of damage amounts to 45.7 billion U.S. dollars. In the same manner as for estimation of recovery needs, estimation of the total damage amount was performed for 17 sectors, which were respectively categorized into the following four sectors: Social Sectors, Productive Sectors, Infrastructure Sectors and Cross-cutting Sectors.

Table 2.3-1 Total Damage Amount in Each Sectors

| Sector | | Damage (US\$ Million) | Percentage (%) |
|-----------------------------------|--|----------------------------------|---------------------------|
| Social Sectors | Housing | 16,077 | 35.2 |
| | Health | 2,324 | 5.1 |
| | Education | 2,369 | 5.2 |
| | Social Protection | 0 | 0.0 |
| | Cultural Heritage and Tourism | 858 | 1.9 |
| Productive Sectors | Agriculture | 2,080 | 4.5 |
| | Water Resources | 115 | 0.3 |
| | Industry and Commerce | 5,107 | 11.2 |
| | Finance and Markets | 52 | 0.1 |
| Infrastructure Sectors | Power | 7,009 | 15.3 |
| | Oil & Gas | 4,262 | 9.3 |
| | ICT | 400 | 0.9 |
| | Transport | 2,794 | 6.1 |
| | WASH | 1,375 | 3.0 |
| | Municipal Services | 88 | 0.2 |
| Cross-cutting Sectors | Governance | 745 | 1.6 |
| | Environment | 73 | 0.2 |
| Total | | 45,727 | 100% |

Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

The total damage amount in each of the four Sectors is as follows: 21.6 billion U.S. dollars in Social Sectors accounting for 47.3%, 7.3 billion U.S. dollars in Productive Sectors accounting for 16.1%, 15.9 billion U.S. dollars in Infrastructure Sectors accounting for 34.8%, and 800 million U.S. dollars in Cross-cutting Sectors accounting for 1.8%. The total of Social Sectors and Infrastructure Sectors account for over 80 percent of the amount.



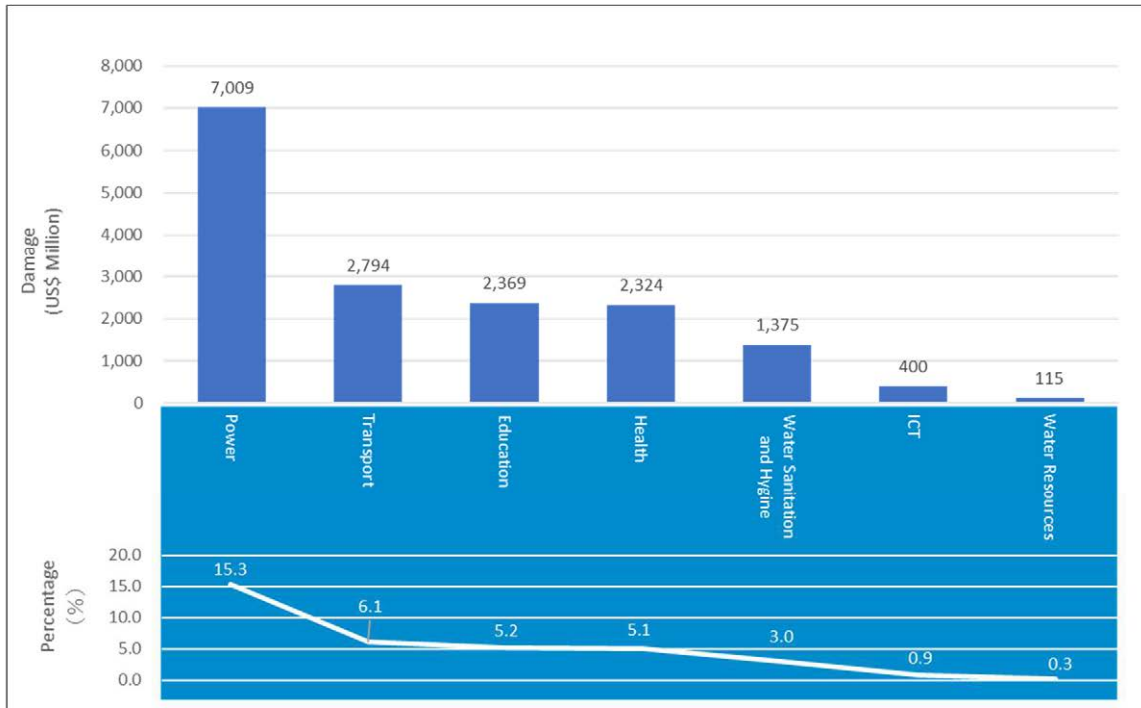
Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

Figure 2.3-1 Total Amount of Damage in Each Sectors

Out of the total amount of damage in each of the 17 sectors, damage to Housing in Social Sectors amounted to 16.1 billion U.S. dollars accounting for 35.2%, damage to Industry and Commerce in Productive Sectors amounted to 5.1 billion U.S. dollars accounting for 11.2%, and damage to Power in Infrastructure Sectors amounted to 7.0 billion U.S. dollars accounting for 15.3%. Damage to Housing was especially pronounced, with damage in cities accounting for 53.5% and damage in regional areas accounting for 46.5%.

The target sectors in this survey are listed below in the order of the total amount. In the same manner as for recovery needs, the amount for Electricity (Power) is especially high, and the amounts for Communication (ICT) and Irrigation (Water Resources) are low. In terms of the total amount, damage to Roads & Bridges (Transport) amounted to 2.8 billion U.S. dollars accounting for 6.1%, while the total amount of needs amounted to 4.0 billion U.S. dollars accounting for 4.5% (Refer to 2-1-2 (1)). It is surmised that the reason for this is that few facilities were completely destroyed compared to other sectors and have been restored to a large degree.

- 1) Electricity (Power): 7.0 billion U.S. dollars: 15.3%
- 2) Roads & Bridges (Transport): 2.8 billion U.S. dollars: 6.1% (Including airports/railway)
- 3) Education: 2.4 billion U.S. dollars: 5.2%
- 4) Health: 2.4 billion U.S. dollars: 5.1%
- 5) Water & Sewage (WASH): 1.4 billion U.S. dollars: 3.0%
- 6) Communication (ICT): 400 million U.S. dollars: 0.9%
- 7) Irrigation (Water Resources): 100 million U.S. dollars: 0.3%



Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

Figure 2.3-2 Total Amount of Damage in the Target Sectors

2.3.1 Electricity

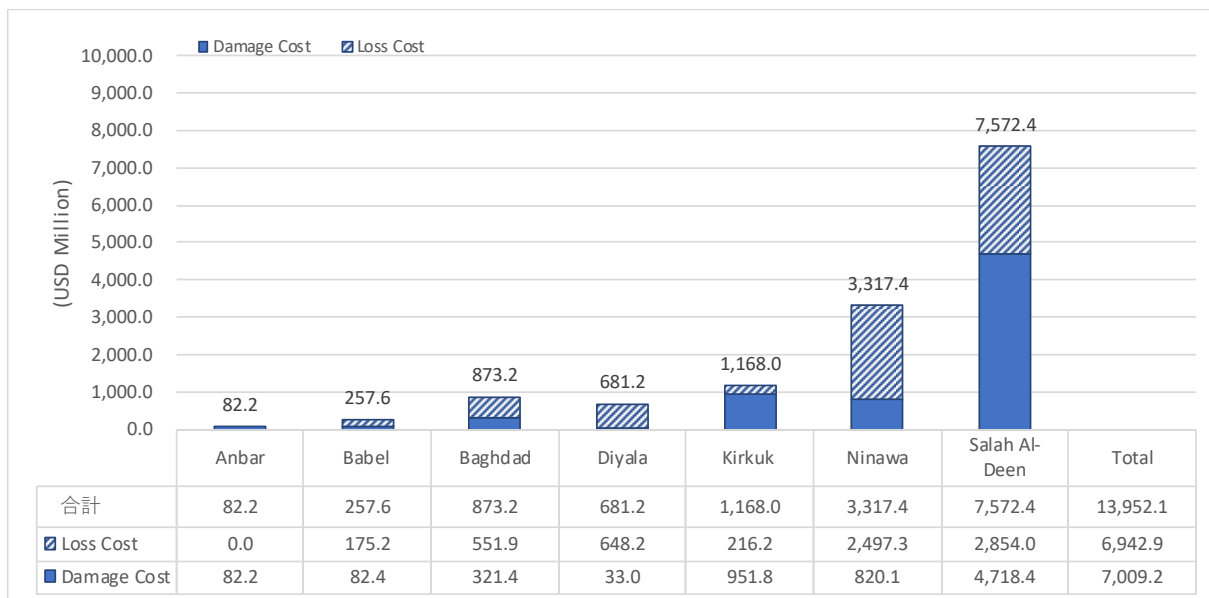
The total amount of damage to the Power sector is estimated to be a damage cost of 7.01 billion U.S. dollars and loss cost of 6.94 billion U.S. dollars. Damage to the electricity infrastructure was very extensive, and when transmission towers of which only 10.3% suffered damage are excluded, 254 out of the total of 296 facilities suffered damage, accounting for 85.8% of facilities. Out of those facilities, 103 facilities were partially destroyed accounting for 34.8%, and 151 facilities were completely destroyed accounting for 51.0%. Due to the fact that over half of the electricity infrastructure was completely destroyed, and the power generation, transmission and distribution networks were severed, there was no other way to supply electricity than perform localized operation. The lack of electricity due to stoppage of transmission and chronic power failures has caused deterioration of medical, health, education, water supply, sewage, communication and all other services. The demand for electricity supply by generators owned by the private sector has increased in light of the lack of public power supply, but the loss cost of using power with a high unit price (40US dollars/kWh) represents a large burden.

Table 2.3.1-1 Status of Damage: Electricity Infrastructure (Number of Facilities)

| Asset Types | Baseline | Total Damaged | Partially Damaged | Completely Damaged |
|-------------------------------|--------------|---------------|-------------------|--------------------|
| Power plant | 17 | 17 | 9 | 8 |
| Substation (distribution) | 115 | 92 | 45 | 47 |
| Substation (transmission) | 49 | 43 | 20 | 23 |
| Substation (power generation) | 8 | 6 | 5 | 1 |
| Tower | 1,810 | 186 | 0 | 186 |
| Mobile plants | 9 | 9 | 5 | 4 |
| Networks | 34 | 34 | 5 | 29 |
| Kiosk sub-plants | 2 | 2 | 0 | 2 |
| Feeders | 43 | 43 | 6 | 37 |
| Admin office | 19 | 8 | 8 | 0 |
| Total Assets | 2,106 | 440 | 103 | 337 |

Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

The total amount of damage to the Power sector in Salah ad-Din was especially large, with 67.3% of the infrastructure in the governorate damaged. In addition, the loss cost in Salah ad-Din governorate and Ninawa governorate was very large, respectively accounting for 41.1% and 36.0%. The total of the damage cost and loss cost was also very large for Salah ad-Din governorate and Ninawa governorate at 54.3% and 23.8% respectively, with the two governorates accounting for 78.1%.



Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

Figure 2.3.1-1 Electricity Infrastructure: Damage and Loss Cost by Governorate

2.3.2 Roads and Bridges

The total amount of damage to the Transport sector is estimated to be 2.79 billion U.S. dollars. The total length of roads managed by the government (including railway lines) is approximately 6,386 km, and approximately 2,301 km of this sustained damage, accounting for approximately 36% of roads. Roads in the different classes for which a report was made that damage exceeded 30 percent consist of: Roads used for daily life at 40.1%, city/town/village roads at 35.0% and main roads at 31.2%. Roads used for daily life represented a majority out of the different road classes, accounting for approximately 69%. In addition, damage to the city road network in the main cities is classified into three levels.

- High level of damage: Baygee (71.14%), Sinjar (66.98%), Heet (58.42%), Mosul (42.79%)
- Medium level of damage: Al-Jalawla (36.46%), Tal Afar (35.90%), Al-Ba'aj (34.49%), Al-Shirqat (29.58%), Bakhdida (28.45%)
- Low level of damage: Qarah Tabbah (22.00%), Al-Falluja (20.94%), Al-Muqdadya (14.15%), Tel Keppe (13.87%), As-Sa'adiyya (10.53%), Al-Hatra (9.9%), Al-Ramadi (7.78%)

It has been reported that a total of 5,792 bridges have sustained damage. In addition to all five bridges over the Tigris River in Mosul being destroyed, regions that experienced repeated fighting with Daesh suffered extensive damage.

Table 2.3.2-1 Status of Damage: Transport Infrastructure¹, Total Length in Meters/Damaged Portion

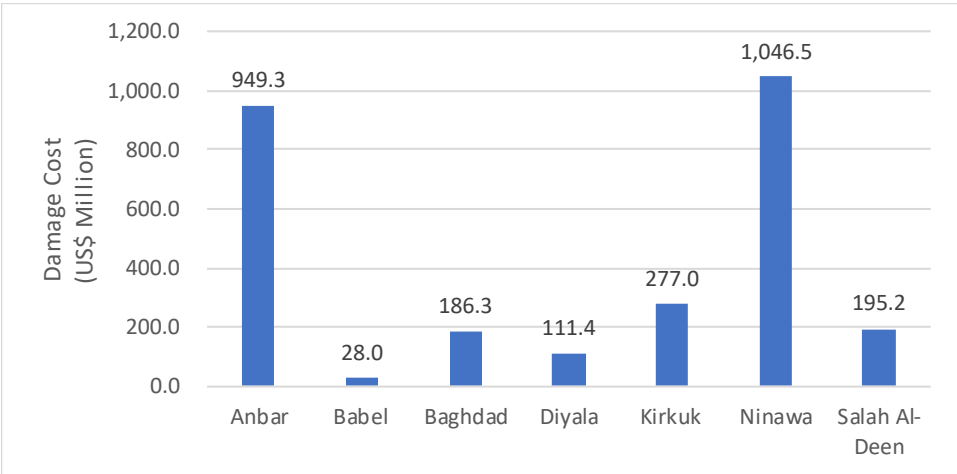
| Asset Type | Baseline | Total Damaged |
|--------------------------|--------------|---------------|
| Primary | 233,600.27 | 57,298.5 |
| Secondary | 473,647.7 | 117,819.57 |
| Tertiary | 590,230.91 | 206,670.75 |
| Residential | 4,396,770.28 | 1,762,518.49 |
| Service | 126,118.77 | 32,026.64 |
| Track | 70,778.59 | 10,105.81 |
| Trunk | 243,395.24 | 75,888.93 |
| Unclassified | 241,012.15 | 28,964.86 |
| Bridge | - | 5,792 |
| Airport (number) | - | 1 |
| Railway station (number) | - | 3 |

Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

The damage cost in the Transport sector was especially large in the governorates of Ninawa and Anbar,

¹ Damage and Needs Assessment specifies damage and needs of transportation infrastructure comprehensively including road, bridge, railway and airport

accounting for 37.5% and 34.0% respectively, which amount to a total of 71.4% for the two governorates.



Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

Figure 2.3.2-1Transport Infrastructure: Damage Cost by Governorate

2.3.3 Water and Sewage

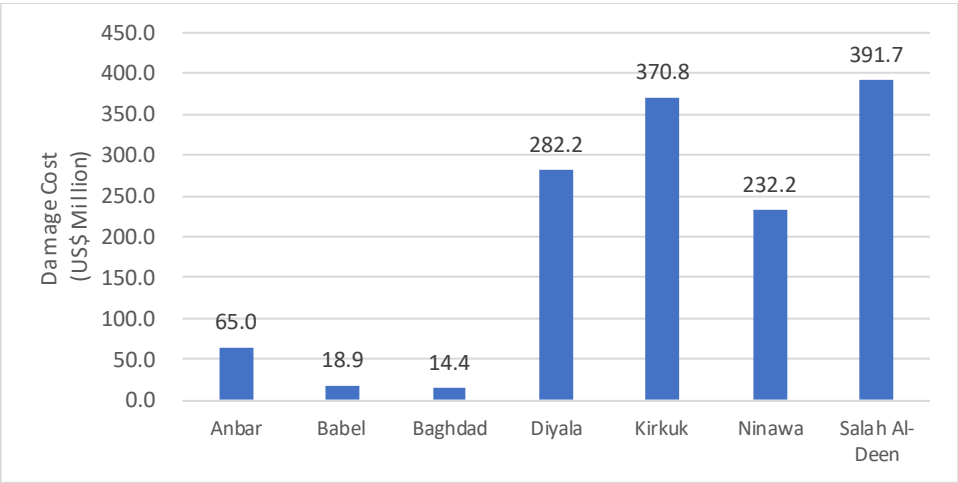
The total amount of damage to the WASH sector is estimated to be 1.38 billion U.S. dollars. Damage to WASH infrastructure was also especially large, with 1,359 facilities out of the total of 1,488 facilities damaged, accounting for 91.3% of facilities. This figure can be broken down into 369 facilities that were partially destroyed accounting for 24.8% and 990 facilities that were completely destroyed accounting for 66.5%. Nearly 70 percent of water supply and sewage facilities were completely destroyed, necessitating local operation. In addition, all water supply trucks and special sewage treatment vehicles have been lost.

Table 2.3.3-1 Status of Damage: WASH Infrastructure (Number of Facilities)

| Asset Types | Baseline | Total Damaged | Partially Damaged | Completely Damaged |
|--------------------------------|--------------|---------------|-------------------|--------------------|
| Well | 84 | 47 | 32 | 15 |
| Water tower/tank | 296 | 271 | 124 | 147 |
| Water treatment plant | 110 | 96 | 42 | 54 |
| Water desalination plant | 20 | 20 | 3 | 17 |
| Sewage treatment plant | 4 | 2 | 2 | 0 |
| Sewage pumping station | 8 | 8 | 7 | 1 |
| Pumping station | 89 | 38 | 23 | 15 |
| Storage reservoir | 7 | 7 | 2 | 5 |
| Water/sanitation office | 13 | 13 | 10 | 3 |
| Equipment and machinery | 641 | 641 | 103 | 538 |
| Network and transmission lines | 13 | 13 | 7 | 6 |
| Water distribution networks | 42 | 42 | 14 | 28 |
| Large facility vehicles | 15 | 15 | 0 | 15 |
| Small facility vehicles | 146 | 146 | 0 | 146 |
| Total Damage | 1,488 | 1,359 | 369 | 990 |

Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

In the WASH sector, the damage cost was large in the governorates of Salah ad-Din, Kirkuk, Diyala and Ninawa, accounting for 28.5%, 27.0%, 20.5% and 16.9% respectively. These four governorates accounted for 92.9% of the total damage cost.



Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

Figure 2.3.3-1 WASH Infrastructure: Damage Cost by Governorate

2.3.4 Health and Medical

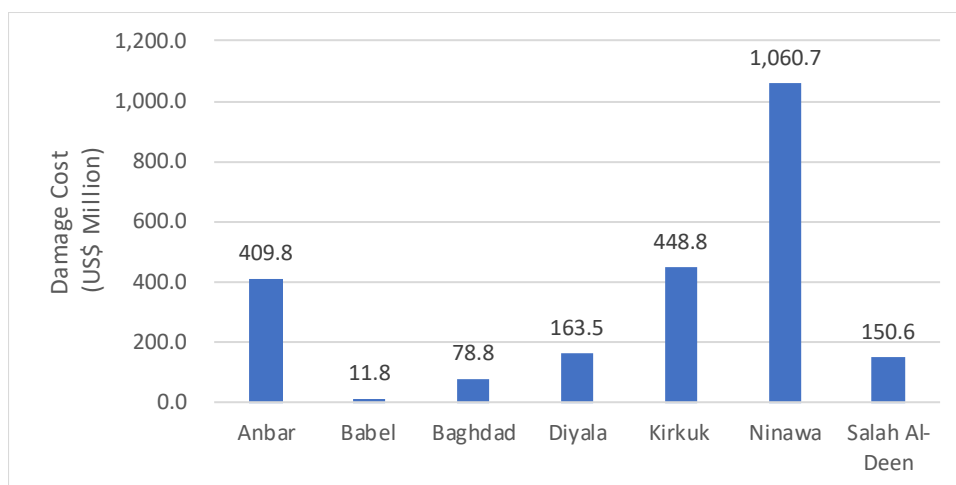
The total damage cost to the Health sector is estimated to be 2.32 billion U.S. dollars. Out of this, 1 billion U.S. dollars is the damage cost for general hospitals, accounting for 43.1% of the total amount. The number of facilities that were damaged was 87 out of the total number of 156 facilities, accounting for 55.8% of facilities. The facilities that were partially destroyed amounted to 61 facilities accounting for 39.1%, and 26 facilities were completely destroyed, accounting for 16.7%.

Table 2.3.4-1 Status of Damage: Health Infrastructure (Number of Facilities)

| Asset Types | Baseline | Total Damaged | Partially Damaged | Completely Damaged |
|---------------------|------------|---------------|-------------------|--------------------|
| Hospital | 56 | 43 | 24 | 19 |
| Health Center | 97 | 42 | 35 | 7 |
| Health Office | 3 | 2 | 2 | 0 |
| Total Damage | 156 | 87 | 61 | 26 |

Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

The damage cost in the Health sector was especially large in the three governorates of Ninawa, Kirkuk and Anbar, accounting for 45.6%, 19.3% and 17.6% respectively. The total for the three governorates accounted for 82.6% of the total.



Source: Framed by Survey Team based on the data from Damage and Needs Assessment

Fig.2.3.4-1 Health Infrastructure: Damage Cost by Governorate

2.3.5 Education

The total damage cost to the Education sector is estimated to be 2.37 billion U.S. dollars. The status of damage in the 16 main cities (excluding Baghdad) in the seven target governorates is described in the next Table 2.3.5-1. Damage to Education sector amounted to 597 facilities out of the total of 1,031 facilities damaged, accounting for 57.9% of facilities. This figure can be broken down into 407 facilities that were partially destroyed accounting for 39.5% and 190 facilities that were completely destroyed accounting for 18.4 %.

During the conflict, school buildings were used as a base by armed groups, and over 130 schools were occupied between 2015 and 2016. The damage cost to school buses, education materials and other items amounted to approximately 100 million dollars. According to the Ministry of Education, a total of 3,840 primary and secondary school buildings sustained damage due to the conflict with Daesh.

Table 2.3.5-1 Status of Damage: Education Infrastructure (Number of Facilities)

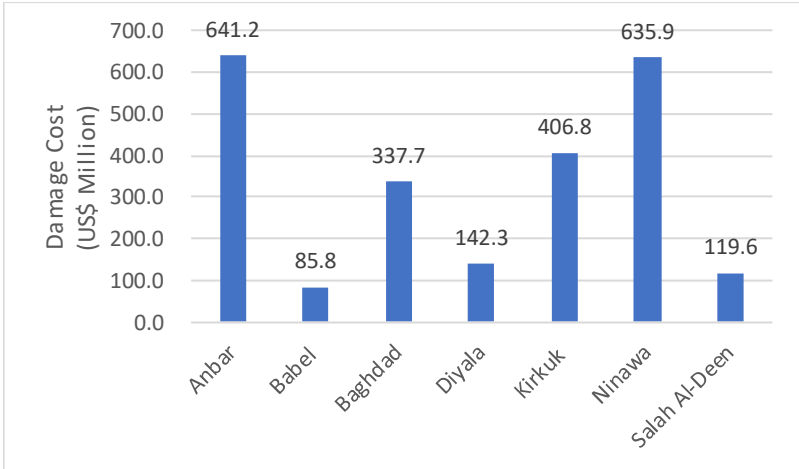
| Asset Types | Baseline | Total Damaged | Partially Damaged | Completely Damaged | Unknown |
|------------------------------|--------------|---------------|-------------------|--------------------|-----------|
| Primary school | 609 | 327 | 229 | 98 | 34 |
| Secondary school | 326 | 189 | 139 | 50 | 11 |
| Primary and secondary school | 6 | 4 | 4 | 0 | 0 |
| Vocational school | 48 | 40 | 23 | 17 | 2 |
| College/university | 41 | 36 | 12 | 24 | 0 |
| Education office | 1 | 1 | 0 | 1 | 0 |
| Total Damage | 1,031 | 597 | 407 | 190 | 47 |

* 16 cities (excluding Baghdad) in 7 target governorates

Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

In the Education sector, the damage cost is especially large in the following governorates: Anbar,

Ninawa, Kirkuk and Baghdad, amounting to 27.1%, 26.8%, 17.2% and 14.3% respectively. The damage cost of these four governorates accounted for 85.3% of the total.



Source: Framed by Survey Team based on the data from Damage and Needs Assessment

Fig.2.3.5-1 Education Infrastructure: Damage Cost by Governorate

2.3.6 Irrigation

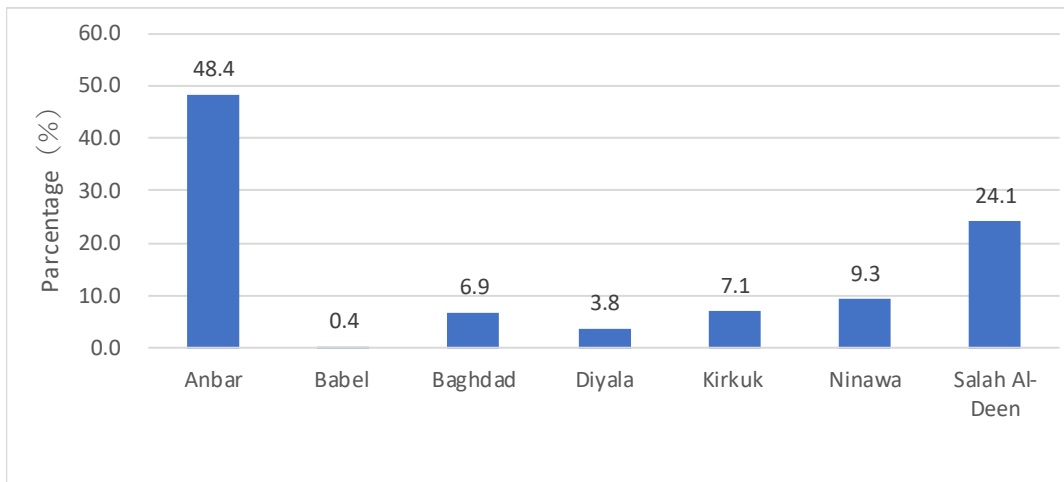
The total damage cost to the Water Resource sector is estimated to be 120 million U.S. dollars. Damage in the seven target governorates amounted to 225 facilities out of the total of 232 facilities damaged, accounting for 97.0% of facilities. This figure can be broken down into 52 facilities that were partially destroyed accounting for 22.4% and 173 facilities that were completely destroyed accounting for 74.6%. In the Damage and Needs Assessment of Affected Governorates, survey results were reported on the number of facilities, but a survey is still being conducted on an evaluation of the damage cost, and the cost damage amount reported will be updated. Out of the total damage amount of 120 million U.S. dollars, the main facilities consisting of dams, irrigation channels and pumping stations sustained a total of 100 million U.S. dollars damage. Iraq has plentiful water resources compared to the neighbouring countries, but approximately 75% of the water originates in neighbouring countries. Climate change and inadequate water flow in rivers are issues of concern in recent years, and the safety of dams is being threatened by the impact of conflicts and earthquakes.

Table 2.3.6-1 Status of Damage: Water Resource Infrastructure (Number of Facilities)

| Asset Types | Baseline | Total Damaged | Partially Damaged | Completely Damaged |
|-----------------------------|------------|---------------|-------------------|--------------------|
| Dams | 7 | 6 | 3 | 3 |
| River embankments | 10 | 9 | 6 | 3 |
| Primary barrages | 67 | 67 | 11 | 56 |
| Bridges | 37 | 37 | 1 | 36 |
| Main canals | 42 | 42 | 20 | 22 |
| Irrigation pumping stations | 47 | 47 | 9 | 38 |
| Irrigation canals | 5 | 5 | 1 | 4 |
| Drainage structures | 1 | 0 | 0 | 0 |
| Drainage structures | 16 | 12 | 1 | 11 |
| Ministry of Water | 232 | 225 | 52 | 173 |

Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

In the Water Resource sector, the damage cost in Anbar governorate and Salah ad-Din governorate was very large, respectively accounting for 48.4% and 24.1%, with the two governorates accounting for 72.5% of the total amount.



Source: Framed by Survey Team based on the data from Damage and Needs Assessment

Fig.2.3.6-1 Water Resource Infrastructure: Damage Ratio by Governorate

2.3.7 Communication

The total amount of damage to the ICT sector is estimated to be a damage cost of 400 million U.S. dollars and loss cost of 1.30 billion U.S. dollars. Out of the total of 4,292 facilities in seven governorates, 2,500 facilities suffered damage, accounting for 58.2% of facilities. Out of those facilities, 2,017 facilities were partially destroyed accounting for 47.0%, and 483 facilities were completely destroyed accounting for 11.3%. In particular, damage to fixed telecommunication exchange facilities and other

fixed assets was especially large, with 83.1% of facilities being completely destroyed.

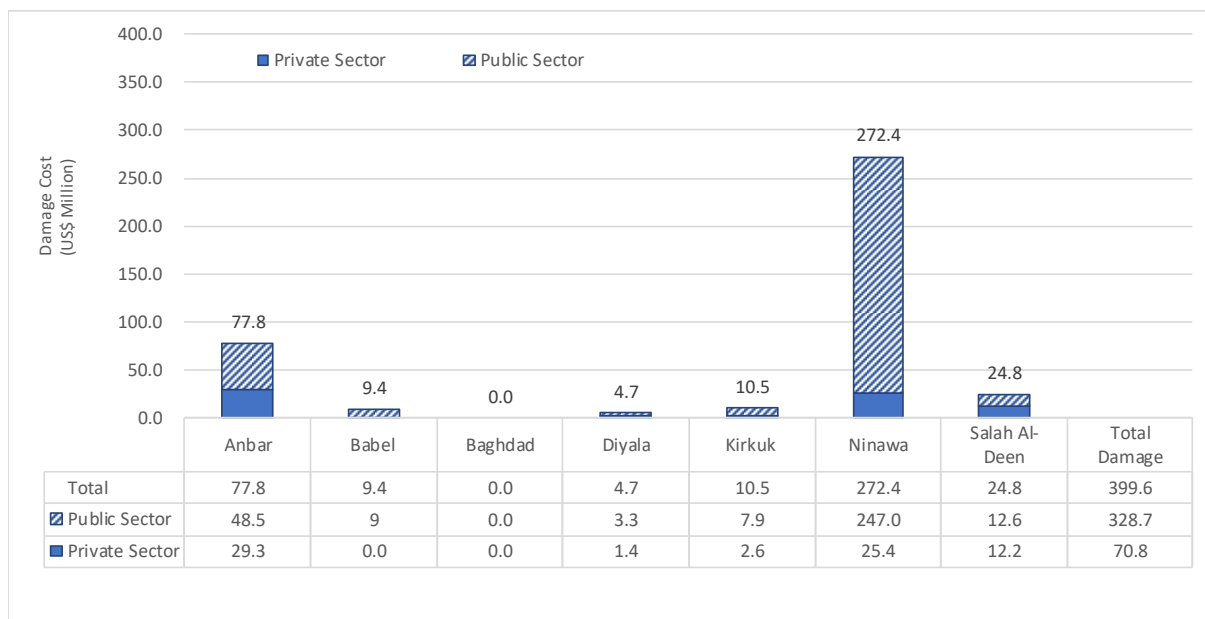
The infrastructure in the ICT sector in Iraq can be roughly divided into a mobile network for cellular phones, smart phones and other mobile devices that is owned and managed by private sector companies, and a backbone network for wired telephones and internet that is owned by the Ministry of Communication.

Table 2.3.7-1 Status of Damage: ICT Infrastructure (Number of Facilities)

| Asset Types | Baseline | Total Damaged | Partially Damaged | Completely Damaged | Ownership |
|--|--------------|---------------|-------------------|--------------------|-----------|
| Mobile assets: towers and base stations | 970 | 509 | 429 | 80 | Private |
| Mobile assets: base stations on building | 1,176 | 679 | 569 | 110 | Private |
| Mobile assets: shelters and power | 2,146 | 1,188 | 998 | 190 | Private |
| Fixed assets: network facilities, central offices, | 0 | 124 | 21 | 103 | Public |
| fixed network switches | 4,292 | 2,500 | 2,017 | 483 | |

Source: Framed by Survey Team with data of Damage and Assessment of Affected Governorates

In the ICT sector, the damage cost in Ninawa governorate and Anbar governorate was very large, respectively accounting for 68.2% and 19.5%, with the two governorates accounting for 87.7% of the total amount. In addition, the total damage cost on assets for the Ministry of Communication was 330 million U.S. dollars accounting for 82.3% and for private sector was 70 million U.S. dollars accounting for 17.7%.



Source: Framed by Survey Team based on the data from Damage and Needs Assessment of Affected Governorates

Fig.2.3.7-1 ICT Infrastructure: Damage Cost by Governorate

3. Selection of Candidate Project

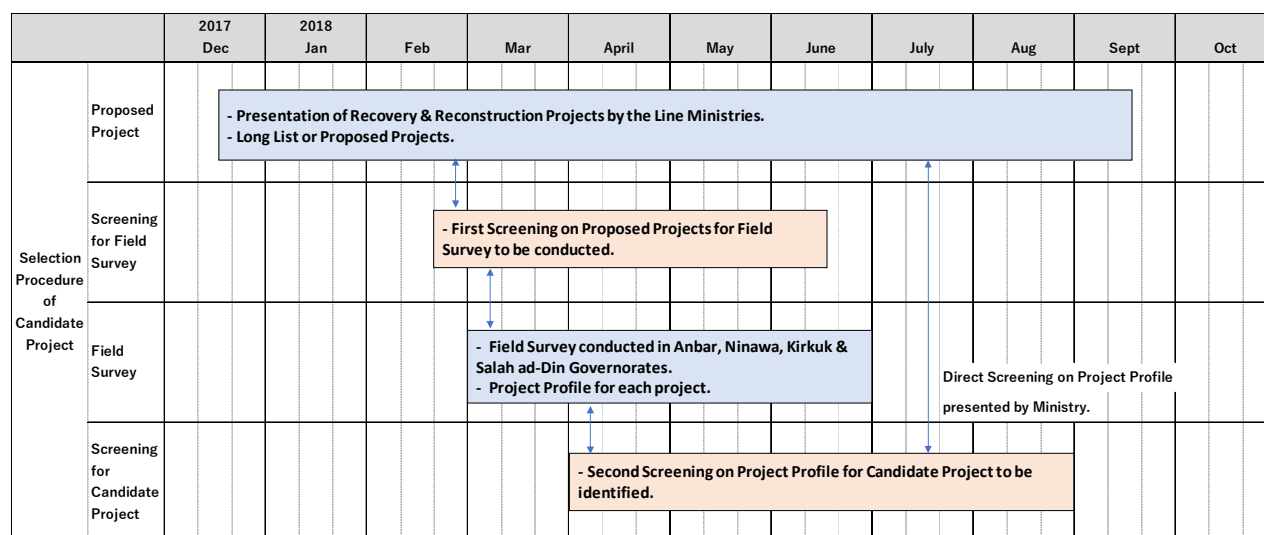
The practical survey period for selecting candidate projects for assistance in this survey was approximately nine months from the middle of December 2017 to the middle of September 2018, excluding the periods for studying documents and organizing information and data before and after the survey conducted in Iraq. The Survey Team received requests for assistance to 444 facility building/construction projects and 259 projects for equipment/heavy machinery provision from ten-line bureaus of seven sector ministries of the Iraqi Government. The team screened the requests using seven selection criteria and selected 106 projects as projects for which field survey should be conducted. After conducting the field survey, the team screened the projects again with the same seven criteria and selected 38 candidate projects (in all the sectors except the education sector). See the above Table 5.1 for the numbers of the requested, field-surveyed and candidate projects by sector.

Table 3-1 Summary of the Survey by Figure

| | Electricity | Road & Bridge | | Water | Sewage | Health & Medical | Education | | Irrigation | Communi- cation | Total |
|----------------------------------|-------------|---------------|------|-------|--------|------------------|--------------------------------|----------------------------|------------|--------------------|--------------------------|
| | MoEle | MoCHMPW | | | | MoH | MoEdu | MoHDu | MoWR | MoCom | |
| | | MoCH | MMPW | MMPW | MMPW | | | | | | |
| Construction Project | 86 | 65 | 31 | 70 | 57 | 25 | — | 32 | 36 | 42 | 444 |
| Equipment / Machines | 0 | 18 | 162 | 34 | 7 | 7 | 0 | 13 | 18 | 0 | 259 |
| Field Survey | 18 | 8 | 1 | 8 | 15 | 6 | 6 | 24 | 3 | 17 | 106 |
| Candidate Project | 13 | 4 | 0 | 5 | 1 | 4 | 3* | 5* | 2 | 9 | 38 |
| Accumulated Amout (Million US\$) | 185.5 | 53.0 | — | 109.2 | 6.0 | 56.3 | (25.4) | (244.2) | 29.0 | 69.0 | 508.0 |
| Remarks | | | | | | | * Gov. of Anbar, Ninawa & SaD. | * Number of Universities . | | | Education, not included. |

Source: Survey Team

3.1 Procedure of the Selection



Source: Survey Team

Fig.3.1-1 Major Stages in Selecting Candidate Projects

The process from receiving proposed projects from the sector ministries to selecting candidate projects for assistance consisted of the following four major stages.

- Stage 1: Receiving proposed projects from the sector ministries and creating a long list of proposed projects
- Stage 2: Selecting projects for field survey from the proposed projects
- Stage 3: Field surveys and creating Project Profiles
- Stage 4: Selecting candidate projects for assistance

3.2 Criteria of the Selection

Table 5.2-1 below shows the criteria used in the screening for selecting projects for field survey in Stage 2 and selecting candidate projects for assistance in Stage 4.

The Survey Team decided to use the criteria flexibly in the screening for selecting projects for field survey from the proposed projects, based on the idea that the result of the inspection conducted in the field survey should be used as the basis of the screening. Meanwhile, the team decided to use the conformity assessment of the result of field study in the screening for selecting candidate projects for assistance.

Table 3.2-1 Criteria of the Selection

| | |
|--|---|
| 1. Engagement in JICA's ongoing projects | Candidate Project must not be engaged in ongoing JICA projects. |
| 2. Project Cost | Cost of Candidate Project shall preferably be in range between \$5.0 mil and \$50.0mil. |
| 3. Environment & Social Risks | Candidate Project must not be associated with concerns over environmental impacts on air, water, soil, ecosystem, flora and fauna. |
| | Candidate Project must not be associated with concerns over social impacts on such as involuntary resettlement and respect for human rights of indigenous people. |
| 4. Security & Safety of Project Site | Security and Safety of Project Site of Candidate Project can be realized. |
| | Project Site must be free from military operation. |
| 5. Damage by Daesh | Candidate Project must be affected by Daesh or military operation associated with Daesh. |
| 6. Resumption of Ceased Project | Candidate Project must not be succeeded from halfway through its completion. |
| 7. Engagement in Projectization with Other Parties | Candidate Project must not be at duplication with Ministries' implementation or assistance of other donors. |

Source: Survey Team

3.3 Project for Field Survey

(1) Receiving Proposed Projects from Sector Ministries and Creating a Long List of Proposed Projects

The Survey Team began accepting requests for assistance to projects from sector ministries of the Iraqi Government when the team visited them during the first field survey in the middle of December 2017. The team continued receiving the requests for nine months until the middle of September 2018. The team did not set a specific period for the sector ministries to submit the requests and maintained the system of receiving them at any time from the beginning because the principal objective of receiving the requests was to identify high-quality projects. Ten-line bureaus of seven sector ministries submitted

requests for a total of 444 construction projects for the reconstruction of basic infrastructure and a total of 259 projects for the provision of equipment and heavy machinery. See Attachment 3. “List of Project Requests (by sector)” for the lists of the proposed projects.

(2) Selecting Projects for Field Survey from Proposed Projects

The Survey Team conducted the screening for selecting projects for field survey for approx. four months from the middle of February, when the team began receiving project requests, to the middle of June, just before the completion of the field survey. After studying project outline of each requested project and identifying matters to be clarified in it, the team made inquiries to and collected additional information on the matters from the bureau. The team used the contents of the responses to the inquiries and additional information in the screening for selecting projects for field survey. Because it was assumed that most of the proposed projects were to be implemented as soon as the budget for reconstruction had been allocated to them or financing had become available from one of the donors to whom project requests had been submitted, the team used the system of screening a project request upon receipt without setting an application period. The details of the screening criteria have already been described in 5.2. The team selected 106 projects for field survey. See Attachment 3. “List of Proposed Projects (by sector)” for the projects selected for field survey.

3.4 Field Survey and Project Profile

(1) Field Survey Implementation and Creating Project Profiles

The field survey was conducted in the 16 weeks from the beginning of March to the end of June 2018 (excluding the two weeks before and after the voting day of the election for the Council of Representatives of Iraq). The Survey Team decided to implement a field survey for each selected project after holding a discussion and reaching an agreement on the implementation of the survey with first the applicant sector ministry bureau and then the local office of the bureau responsible for the survey site. The field survey teams followed the principle of visiting a survey site with an official in charge of the project concerned of the local office. The Survey Team conducted field survey of the site of each of the 106 projects in the four target governorates and compiled the result of the survey in the project profile. The team used a system of conducting field survey of a project site as soon as the preparation for it had been completed. See Attachment 4. “Project Profiles and Relevant Materials” of project profiles of individual projects produced by the field survey teams.

(2) Composition of Field Survey Teams

The field survey team mainly consists of three core members, a civil engineer, an electrical engineer, and an engineer specialized in waterworks and sewerage, to handle the survey for projects in the target eight sectors with varied contents, in addition to a social worker. Three field survey teams were formed to cover the entire target four governorates. They were assigned to Ramadi (Anbar governorate), Mosul (Ninawa governorate) and Tikrit (Kirkuk and Salah ad-Din governorates) to conduct field survey.

3.5 Candidate Project

The Survey Team conducted the screening of a project for selecting candidate project whenever the field survey on the project had been completed, based on the Project Profile, data obtained in the field survey and the relevant information obtained for the applicant ministry bureau and the local office concerned. The same selection criteria as those used in (2) Stage 2 mentioned above were used in this screening. The team selected 38 projects as candidates for assistance in the screening.

After the field survey was finished in July, the Survey Team requested the project profiles, relevant photographs and breakdown of the project costs for new requests. Based on their contents, the team selected two projects for assistance in this screening.

For the Education sector, the Survey Team found it difficult to screen individual projects with the same screening process as used in the other sectors under the current circumstances. Therefore, although the field survey was conducted on projects in education, the Survey Team decided to select candidate projects for assistance in the Education sector with a separate system used in the other sectors. The team decided to recommend the system of selecting several schools with high priority for renovation and reconstruction found in the lists of primary and secondary schools requiring renovation and reconstruction by governorate, which were revised monthly by the Ministry of Education, as subjects of the screening for candidate projects for assistance in the Education sector (Because a school with the highest priority for renovation/reconstruction will be renovated/reconstructed first as soon as the funding becomes available, it is difficult to select a specific school as a subject of a project to be implemented in future.). Requests for projects under the Ministry of Higher Education and Scientific Research included renovation/construction of multiple buildings and research facilities with respect to each university. Since further discussion was required for deciding which of those buildings and facilities shall be included in projects to be implemented, the Survey Team decided to recommend five universities as candidates for assistance after analyzing the project profiles and the priority order of the ministry.