SWISS SOLIDARITY

MINIMUM STANDARDS
RECONSTRUCTION OF BUILDINGS FOR PUBLIC USE

These standards apply to temporary or permanent reconstruction of public buildings, e.g. education, health or community centres.

The standards are consistent and **comply with the internationally agreed construction standards** listed in the annexes, and set the baseline level of good practices Swiss Solidarity expect to be met explicitly by the projects submitted for co-financing. If a component of the project cannot comply with a standard, explain why.

At the beginning of this document are **Guidance Notes** (A). Use them when developing chapter 4 (project identification), chapter 5 (project) and chapter 6 (coordination) of the funding application form. They are meant to guide you in clarifying the baseline scenario and the resulting technical solutions.

Part (B) **Standards** should be developed in chapter 7 (quality and compliance) of the funding application form. Consider also the compulsory annexes to be added to the funding request.

A) Guidance notes for completing chapters 4 to 6 of the funding application

1. SITUATION ANALYSIS: NEEDS, CAPACITIES AND RESPONSE

Justify and quantify **needs**:

- Describe initial coverage of services (health, educational or social assistance) and assess damage and consequences in the proposed location.
- What is the number of current beneficiaries? What could be future figures (population increase/decrease, shift from double to single shift) and related extension needs?
- What is the population profile (socio-economic data, geographical, etc.)?
- What are the limits of intervention?

Clarify the **objective**. Does the reconstruction intervention aim to:

- Permit a rapid resumption of services after the disaster?
- Ensure user safety (physical) and security (protection) by reconstructing/retrofitting resilient buildings?
- Allow continuous functioning services even after a disaster?
- Reduce social, economic, and cultural losses even after recurring disasters?
- Provide lifesaving “shelter” for communities during or after a disaster?

Justify the project approach: **temporary, new or retrofitting** (also see standard 1)

- How is access to public services restored? This could be a mix of approaches.
- Construction of temporary structures or temporary repairs?
- Reconstruction of new, permanent and resilient structure?
- Structural retrofitting of existing structure?
- Justify the cost effectiveness of the chosen approach (cost/lifespan, impact of different solutions).
- Describe land tenure situation. Permanent public buildings should be on public or community owned land.

Describe **sectorial and inter-sectorial coordination**:

- Who are the relevant actors and partners (national, international, governmental and non-governmental, local representation)?
- How is sectorial coordination ensured, so as to avoid risk of duplication, ensure gap analysis and consider geographical priority?
- How is coordination with other sectors ensured (camp coordination, other infrastructure e.g. road, water, health/education, etc.)?

Confirm **future operability**: (also see standard 5)

- Does the project fit actual needs and national plans?
- Who will operate the infrastructure in the future?
- Is assignment of operational staff guaranteed by relevant authorities? MoUs should be signed before construction work starts.

Do no harm: indiscriminate access and use must be guaranteed

- Is local acceptance ensured? Is conflict sensitivity taken into account?
- Is the project ensuring equity in access to services? Is the project socially neutral and indiscriminate? Is there no age, gender and diversity, ethnic, economic, or religious discrimination?

2. SCENARIOS ON RISK AND RELATED PERFORMANCE OBJECTIVES FOR CONSTRUCTION

Clarify **existing risks** and related possible recurrence

Natural disaster

- General: local risks must be assessed and reported, particularly regarding earthquake zone level, cyclone and storm strengths, but also regarding levels of snow fall, flood, etc.
- Local: presence of neighbouring buildings, industrial pollution, risk of debris, trees, water table, slope, river etc.

Other possible risks

- Proximity to conflict zone, UXO or mine presence,
- Health hazard such as malaria

Clarify **site selection**:

- In general, a construction site should be outside existing risk areas. It should also be easily accessible for future users. If not, justify chosen location, required mitigation measures and related cost compared to relocation of the building.

Explain the **performance objectives** (agreed, assumed, negotiated, imposed…)

- What risk scenario is the project based on. What is the projected recurrence or occurrence of the risks?
- What are the resilience parameters taken into account (wind speed, peak ground acceleration, water level)? Who issued them?
- How fast should the building be operational again?
- Vulnerability must be assumed maximum (children, patients), and projected infrastructure must ensure a life-saving performance. But what is the position towards damage, should the building still be temporarily operational (even damaged)? Totally operational (undamaged)?

- What is the building's expected lifespan?

Explain the **risk mitigation measure** taken (not related to design, see standard 3):

- What are the measures foreseen to foster resilience against identified risks with regard to site development (firewall, embankment/drainage, mitigation structure e.g. retaining walls etc.)?
- What specific measures are taken to raise the population's risk awareness? Is a safety committee and an evacuation plan set up? Trained and rehearsed?
- How will the operation of the building as an evacuation centre or "shelter" be organized *(*if applicable)?

B) Standards

1. DESIGN

a. Public buildings must insure life-saving performance.

b. Explain the choice of intervention type. Three categories/responses are possible and can be combined:

- Temporary building or temporary repair restores immediate service; it allows service operation while rebuilding or retrofitting damaged structures. The structures should never put lives at risk in the interim period (typically tents, plastic sheeting or light frame structures with 2-5 years lifespan);
- **Retrofitting** options must always be considered in the preliminary assessment for reconstruction projects. For economic reasons, and to avoid loss of historic and cultural heritage. Resilience standards should meet the minimal requirement to save lives: no cosmetic repair, only structural reinforcement;
- **Reconstruction**: disaster proof design for durable permanent building according to performance objectives;

The analysis should include cost/lifespan comparison, social acceptance and technical feasibility. Mitigation costs (like retaining walls) should be included in the cost effectiveness analysis.[1]

c. State **safety measures** being applied regarding disaster preparedness:

Evacuation concept including emergency exits and escape routes (number and location, corridors and stairs properly sized, handrail, doors opening direction, window protection, fire compartments and exits, signage and emergency alarms etc.).

d. Clarify **which building regulation** is being applied:

- Programme specification: valid local construction norms should be applied, according to relevant ministries and department of public works as well as internationally approved standards (UNICEF m2/student, WHO recommendations etc.);
- Construction code (non-flammable material, lightning rod, electrical wiring, etc.);
- Internationally recognized building code, locally approved, should serve as structural calculation basis (Eurocode, IBC, Swiss SIA norms etc.).

[1] More explicit concepts are here used then the general „Building Back Better and Safer"

e. Qualified professionals:
   - Permanent construction projects (retrofitting or reconstruction) are to be drafted, designed and supervised by professionally qualified persons (architect and engineer degree level) from the beginning to the end of the project (see standard 2, Quality Control). In case of doubt, external expertise can be ordered by SwS;
   - Clarify who is taking responsibility for the project at each stage (management, budget follow up, design, signing the plan, construction monitoring, QC, handover-guaranty); Make sure the person has the legal ability.
   - SwS considers the partner organisation as responsible for the building after handover (resilience, user safety as per initial project; extension and further changes are not included).

f. Explain structural concept in relation to performance objectives (engineer):
   - Geological assumption;
   - General building shape, dilatation joints, wind orientation, etc.;
   - Structural model (narrative: load bearing masonry / confined masonry / timber frame / concrete moment frame…);
   - Implementation model: type of foundations, bracings, roof anchoring;
   - Connection of additional elements (partition walls, veranda, future extensions…);
   - Constructive details (constructive nodes from roof to foundation, can be submitted at a later stage however still before implementation).

g. Confirm social and cultural adequacy: (see standard 5 Operation and maintenance)
   - Construction design (architecture) shall be adapted to the context (material acceptance, size and disposition of spaces according to customs);
   - Inclusive local consultation must take place (gender and vulnerable);
   - Design should from the outset take into account easy and cost-effective maintenance;
   - Disability adaptation: ground floor at least shall be accessible for persons with disability;
   - Extension needs and possibilities must be discussed and taken into account;
   - Access must be validated in terms of distance/time/roads.

h. Consider exemplarity
   - Public buildings often serve as examples. Local actors in reconstruction might replicate a project's implemented construction techniques; therefore, only simple structural systems should be used that if possible should remain visible and understandable;
   - Only incremental changes can be introduced in humanitarian reconstruction: local materials and techniques should be promoted and traditional construction methods analysed and considered;
   - High tech solutions[2] such as "special moment frame" structures are not adequate in typical humanitarian contexts. Simpler systems e.g. bracing, sheer or buttress walls should resume horizontal load;
   - Disaster proof construction and details should be disseminated during construction (use of local labour force, on the job training).

[2] *high tech = a solution that is completely foreign to prevailing construction technology of the specific country, requiring either imported materials or know-how or both and which cannot be replicated in the foreseeable future*

i. Explain climatic concept and mechanical and electrical systems
   - Appropriate measures must be taken against heat (natural or electrical) or cold (through insulation and heating). Lighting and ventilation must be adequate;
   - What are the systems foreseen and related operational cost?

j. Knowledge transmission
   - Technical studies on public building structures are expensive; investment should benefit local authorities (participation to solutions catalogue);
   - Employment of young national engineers should be promoted.

2. IMPLEMENTATION AND QUALITY CONTROL SYSTEM

a. Justify the chosen (re)construction and implementation approach (contractor driven/direct project, partner driven, cash approach, etc.) and related **Quality Control (QC) system**. A QC chart/matrix must clarify who is responsible when for what:
   - Actors and partners with their roles and responsibilities in the construction process must be clarified (e.g. through a flow chart of the chain of command) and related conflict mitigation processes (warning, contract discontinuation, prosecution related to corrective measures): define **who** is in charge of technical supervision, with the required technical background level;
   - If local risks call for **special disaster resilient construction systems**, the drawings must be checked and signed by a qualified engineer and specific technical cross validation put in place during construction at specific stages;
   - **What** has to be controlled: Material checks, respect of technical design, correct implementation according to drawings and rule of art, planning and cost follow up, labour force management (security, loans and insurance, no child labour);
   - **When** should quality control checks take place, planning milestones, final quality guaranty insurance, handover procedure and documentation must be included.

b. **Tendering process:** should be neutral, fair to all parties and avoid creating tension and conflict. It should conform to the organisation's own tendering standards and the existing legal requirements. Main aim is to ensure quality, cost effectiveness and process transparency.

c. Priority should be given to **phasing** for large construction project, to enable revisions and capitalize on initial experiences.

3. ENVIRONMENTAL IMPACT

a. **Dangerous material** for users, workers and environment (e.g. asbestos, chemical) shall be avoided in construction or retrofitting (at current state of the art).

b. Construction should not put a **burden on water** availability for the population. Waste material should be properly disposed of or recycled.

c. Construction materials should be **locally purchased** as much as possible, ecological footprint must be taken into account (e.g. brick burning, transport).

d. Attention must be given to **deforestation**. Tree planting is encouraged as part of any construction project.

e. In cold climate, **insulation measures** and **heating solution** must be applied with ecological sensitivity.

4. WATER, SANITATION AND HYGIENE (WASH)

   a. The specific strategy to cover WASH needs has to be described explicitly. Water supply, excreta, waste disposal and drainage needs should be covered. Clarify the system as either part of the project or to be implemented by another actor. Rainwater harvesting promoted when possible.

   b. Sphere standards should be applied *(water: 5L per outpatient, 40-60L inpatient, 3L per pupil) (Toilet: 1/20 bed, 1/50 outpatient, school:1/30 girls 1/60 boys).*

   c. SwS Minimal Standards on “Sanitation facilities” or “Water supply systems” must be filled out additionally.

   d. Special attention should be put on protection issues. Gender and accessibility sensitivity should be applied when proposing wash solutions.

5. OPERATION AND MAINTENANCE

   a. Local population and authorities must be included throughout the process; beneficiaries and authorities must approve construction site and final design. Their participation is mandatory for future operation (initial MoU).

   b. Beneficiaries should be able to easily monitor, operate, maintain, repair and extend the proposed public infrastructure in the future:
      - The drafting of an effective **monitoring and maintenance concept** (running cost estimation, information and training regarding operation and maintenance, clear repartition of roles, etc.) has to be an integral part of the implementation process from the beginning – and necessary resources have to be made available;
      - Beneficiaries should be able to monitor the building’s structure and prevent eventual damage (structural monitoring checklist: rift, land settlement, structural moves);
      - Ownership, know-how and technology transfer shall be ensured (ability to manage and operate utilities such as water, sanitation, electricity);
      - Full project documentation should be transmitted to operating committee and administration.

   c. Required furniture, medical equipment must be provided through the project (or by partner).

6. COMPLIANCE WITH NATIONAL PROCEDURES

   a. Confirm compliance with government policies (master plan) and cluster recommendations (agreed master plan for camps, adopted design for school etc).

   b. Confirm legal procedure:
      - Construction permit (or ongoing building approval procedure)
      - Memorandum of Understanding (MoU)
      - Handover certificate to operating institution.

C) Compulsory annexes

   a. Transmit complete project documentation (architecture) together with the funding application.

- Master plan with altitude plans of each level, cross sections and elevations at appropriate scale in a readable format with English, French or German legend.
- Construction description (architectural narrative): materials used, type of roofing, technical equipment - wash and electricity, protective doors/shutters, surrounding treatment - drainage, etc.
- Cost estimation (Bills of quantity).

b. At advanced stage, transmit complete project documentation (structural engineering)

D) References

INTERNATIONAL STANDARDS

- Shelter Cluster; Construction Standards Working Group: Construction Good Practice Standards; Common standards for the responsible delivery of building construction in humanitarian settings; Version 0.8; May 2017
- INEE, note d'orientation pour la construction d'écoles plus sûres
- INEE, normes minimales pour l'éducation
- UNICEF, compendium, transitional learning spaces, resilient design and construction in emergencies
- UNRISD, Disaster Prevention for Schools Guidance for Education Sector Decision-Makers

OTHER DOCUMENTATION

- Save the Children, Construction Policy, Benchmark Standards and Tools