#### PROGRAM SAFEGUARD SYSTEMS ASSESSMENT

### A. Program Environmental and Social Impacts and Risks

- 1. This document summarizes the findings of the program safeguard system assessment (PSSA) undertaken in 2014 for the Asian Development Bank (ADB)-funded Skills Sector Enhancement Program, which has been supporting the Skills Sector Development Program (SSDP), 2014–2020 of the Government of Sri Lanka. Minor updates were made to the original PSSA, mainly to reflect the change in the executing agency's name and the implementation experience until 2017.<sup>1</sup>
- 2. The PSSA examined the environmental and social safeguard management and compliance aspects of Sri Lanka's technical and vocational education and training (TVET) system to ascertain congruence with the safeguard policy principles of ADB's Safeguard Policy Statement (2009) (SPS). The PSSA included a safeguard gap analysis for the program as the basis for the environmental and social management framework (ESMF), which the Ministry of Skills Development and Vocational Training (MSDVT) adopted in 2014. The PSSA also examined whether the TVET system is capable of managing safeguard risks and promoting sustainable development.
- 3. Sri Lanka's TVET system needs reforming to meet the economy's changing human resource needs. The key problems are: (i) failure to provide appropriate skills training to new labor market entrants, (ii) lack of mid-level skills training for technicians, (iii) low market responsiveness, (iv) limited programs and the absence of a flexible delivery system, (v) outdated national vocational qualification framework, (vi) lack of qualified instructors, and (vii) low capacity of the Tertiary and Vocational Education Commission (TVEC) for quality assurance.
- 4. MSDVT is the focal ministry for skills development, assisted by several other ministries and institutions. The TVET system will benefit from better coordination and planning capacity in aligning skills training efforts with financial resources, market demand, and national priorities. The National Human Resource Development and Employment Policy, 2012 outlines the government's commitment to skills development and expansion.<sup>2</sup> To operationalize this commitment, the Department of National Planning in 2013 adopted the first sector-wide, medium-term development program, the SSDP. The SSDP focuses on providing an efficient skills education system to meet local and foreign labor market demand by 2020. It generates for school leavers and secondary school graduates an alternative to higher education, and a pathway to gainful employment.
- 5. The program will have four key result outputs—improved quality of TVET (output 1); enhanced industry partnership for TVET planning and implementation (output 2); increased participation and better equity in TVET (output 3); and improved sector management to implement policy, institutional, and operational reforms (output 4). Outputs 2 and 3 include refurbishment and enhancement of college buildings and the construction of new buildings.
- 6. The PSSA indicates that the environmental impacts of the program will be minor and site specific, and that mitigation measures can be built into the environmental management plans

The Ministry of Youth Affairs and Skills Development was renamed to the Ministry of Skills Development and Vocational Training in 2015.

<sup>&</sup>lt;sup>2</sup> Government of Sri Lanka, Secretariat for Senior Ministers. 2012. *The National Human Resources and Employment Policy for Sri Lanka*. Colombo.

(EMPs) of individual civil works (subprojects) to manage the impacts satisfactorily. Environmentally sensitive locations will be avoided when implementing program activities. The PSSA reconfirmed the program's initial categorization of environmental impacts (category B). In the case of involuntary resettlement safeguards, the PSSA found that resettlement impacts of the program are insignificant. The refurbishment of existing physical facilities will take place within college premises. Most new buildings constructed under the program will also be within college premises because colleges generally own large areas of land that are kept vacant for future expansion. A few new buildings will be constructed on land owned by the government. Government land is either state land that has been handed over to various ministries and agencies, or land still in the hands of the central government. The program will negotiate with ministries, departments, and agencies that possess spare government land and with the central government to obtain the land required for new buildings. MSDVT has assured ADB that all land obtained for new buildings will be without encumbrances such as squatting and encroachment, or any public easement. Such land will be free to start construction upon receipt. MSDVT has also reconfirmed that it did not obtain any land with such encumbrances from the state or from other ministries in anticipation of the ADB program. The PSSA reconfirmed the initial categorization of resettlement impacts (category C). The program will not have any impact on indigenous peoples who live in a few small and scattered pockets in forest areas of the Eastern Province of Sri Lanka. The colleges and new buildings will be in urban centers far away from their habitats. Based on this finding, the PSSA reconfirmed the initial categorization of impacts on indigenous peoples (category C). The confirmation of these initial categorizations will not, however, preclude the screening and categorization of each subproject for such safeguard impacts by using the guidelines and checklists of the program's ESMF.

# 1. Environmental Impacts and Risks

- 7. The refurbishment of colleges and the construction of new buildings at college sites could cause the following environmental impacts and risks:
  - (i) Site clearance and preparation. The sites for the extension of TVET centers do not pose any environmental risks regarding site clearance, as they are already in use. In case of new sites, there can be risks such as drain and waterway blockage during site clearance. Vegetation not properly disposed of could also spread invasive species, causing environmental degradation. Pools of stagnant water could generate health risks by creating vector populations. Improper disposal of excavated material such as boulders on site cause environmental degredation. Site clearance could also lead to or aggravate soil erosion, especially during the rainy season. Compaction of water-logged areas without adequate measures for natural flow could cause temporary flooding.
  - (ii) **Noise generation.** Refurbishment or construction of structures causes noise, especially while demolishing buildings and loading and transporting materials.
  - (iii) **Dust generation.** Demolition of buildings will cause dust. Loading and transportation of debris increase dust levels. Transportation and storage of new building materials also generate dust. Dust pollution poses health hazards to students and residents in the vicinity.
  - (iv) **Transport.** Transportation of building materials to and from the site will create noise, dust, and disturbances, and can cause injury to children and damage college property if not adequately managed.
  - (v) Occupational hazards to construction workers and students. Construction workers are exposed to occupational hazards if proper safety procedures are not followed. At TVET centers, some training activities can cause occupational hazards, especially related to the use of sharp objects, hazardous liquids and

- compounds, and noise-generating equipment. Such hazards were noted and pointed out during the field visits.
- (vi) Lack of drainage leading to soil erosion, sedimentation, and health hazards. Gravel, sand, and soil brought into sites for construction work or resulting from demolitions might, if not properly handled, be washed off into nearby streams, paddies, and low-lying areas and wetlands. This can cause sedimentation that blocks the natural flow of water and degrades habitats.
- (vii) Contamination of groundwater and surface water. Wastewater can contaminate drinking-water sources through runoff if not appropriately channeled into disposal pits or other suitable areas. This risk is particularly high when the wastewater comes from school laboratories and toilets. These risks were noted and pointed out during field visits.
- (viii) Waste generation. Any construction will generate construction debris which, if not disposed of appropriately and in a timely manner, will pollute adjoining areas, including potentially sensitive sites and residential areas. The lack of proper construction waste disposal could also block natural drainage systems and create breeding grounds for waterborne diseases. The planned upgrade of science laboratories can also create a risk by increasing the quantities of hazardous waste and organic waste. However, the estimated quantities will be very low since any hazardous materials will be used only for training purposes. The lack of appropriate mechanisms to dispose hazardous and toxic waste produced during construction and operation of the facilities proposed under the program could lead to the contamination of soil and water resources.
- (ix) **Resource extraction.** The planned refurbishment and extension of colleges' physical infrastructure will require materials such as sand, clay for bricks, and timber. This will place a burden on natural resources. However, given the nature of works envisaged, these implications are not likely to be significant.
- (x) Damage to aesthetics of site and/or area. Refurbishment and extension of college buildings could have some impacts on the aesthetic and scenic characteristics of colleges and their environs. Anticipated aesthetic impairments will be temporary and limited to the construction phase. At new sites, the risk of damage is high if new structures are not consistent with college architectural customs.
- (xi) Stressed sanitary conditions. Inadequate and nonfunctional washing and toilet facilities expose college students to health risks. A shortage of clean drinking water will result in dehydration. During field visits such risks were noted and college authorities were informed. At new sites, stressed conditions will be accentuated unless the sites are designed in a way that avoids disruptions to clean water supply.
- (xii) Lack of adherence to set standards. During field visits, a few science laboratories were found that did not meet occupational health and safety standards such as provision of adequate safety equipment and chemical disposal processes. These risks were noted and pointed out to college managers.
- (xiii) Lack of maintenance of developed infrastructure. The lack of adequate funds to maintain training centers leads to their rapid deterioration.
- 8. The short-term construction-related impacts and risks, and safeguard risks outlined above, can be prevented or at least mitigated by adopting standard operational procedures and good construction management practices. Such adoption will require sufficient funds and their proper management. These procedures must be outlined in the terms of reference of an initial environmental examination report. A sample EMP covering environmental impacts and

corresponding mitigation measures is provided in the ESMF to assist the formulation of site-specific EMPs.<sup>3</sup>

# 2. Social Impacts

- 9. The program will bring distinct and clear benefits to the communities where the colleges are located, and to the regions in general:
  - (i) **Local development.** The program-initiated physical infrastructure will benefit students and generate more income sources for local communities, such as catering of food and transportation. The upgrade of colleges will increase land values and could generate additional demand for accommodation and other facilities such as bookshops and food centers.
  - (ii) **Promotion of social cohesion.** The program will increase cohesion among different ethnic groups because it will enroll more students from different parts of the country.
  - (iii) **Promotion of gender equity.** The program will increase the gender balance because it is designed to encourage both male and female students to enroll in courses at the colleges. This is guaranteed by the Women's Charter of the Government of Sri Lanka (1993).
  - (iv) **Regional equity.** The program will improve regional equity because it will distribute various courses and skills program packages widely among colleges in all regions of the island.

### B. Safeguard Policy Principles Triggered

### 1. Environmental Safeguard Policy Principles

- 10. The program is likely to trigger the following environmental safeguard policy principles of the environmental policy component of the SPS: project screening and categorization (1), environmental assessment (2), environmental management plan (4), consultation and grievance redress (5), disclosure of planning instruments (6), monitoring and reporting (7), pollution prevention (9), and occupational and community health and safety (10). Not included are the following three principles:
  - (i) Principle 3: Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts, and document the rationale for selecting the particular alternative proposed. Also consider the no-project alternative.
  - (ii) Principle 8: Do not implement project activities in areas of critical habitats. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated.
  - (iii) Principle 11: Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and

Additional Information to the PSSA (accessible from the list of linked documents in Appendix 2 of the main text of the report and recommendation of the President for the ADB program).

conservation approach for materials that may be discovered during project implementation. (This principle is unlikely to get triggered because the program locations have already been used to build colleges.)

11. A gap analysis distilled from the comparison between environmental safeguard principles of the SPS and the status of safeguard compliance by the TVET system is given in a supplementary linked document (footnote 2).

# C. Diagnostic Assessment

### 1. Assessment Methodology and Resources

#### a. Desk Review of Documents

12. A desk review was undertaken as part of the PSSA to review policy documents, baseline reports, assessments, and monitoring and evaluation reports of the TVET system. The key documents reviewed are: *Mahinda Chintana* – Vision for the Future, and the Public Investment Strategy of 2013, both issued by the Ministry of Finance and Mass Media; the World Bank's 2013 study on Sri Lanka: Building the Skills for Economic Growth and Competitiveness; and the Skills Sector Development Program, 2014–2020 issued by the Department of National Planning. The review also examined various policies, laws, and regulations related to the environment and social safeguards. Among them are the 1980 National Environmental Act (NEA) and its 1988, 1993, and 2000 amendments; Land Acquisition Act (1950); National Involuntary Resettlement Policy (2001); and the National Compensation Policy (2008) and its regulations approved in 2010.

#### b. Consultations

- 13. Consultations with MSDVT, its affiliated institutions, and college managers revealed the importance of safeguard policy application in program activities (footnote 2). The consultations provided a good view of current conditions, problems, aspirations, and possibilities of realizing safeguard compliance. The consultations generally indicated that although environmental and social safeguard compliance has been recognized as a priority task, its implementation is very limited and at best ad hoc.
- 14. MSDVT highlighted several main environmental issues that receive special attention at college premises and also in training courses. Among them are labor safety, water pollution, and disposal of waste material. It also emphasized that because of the lack of resources such issues often do not receive the full attention of college management. Some key issues are:
  - (i) Better ventilation in college classrooms—installations are expensive and therefore cannot follow best practices.
  - (ii) Segregation of solid waste—colleges expect the local governments to segregate waste generated in colleges, but lack of a waste segregation program at local governments impedes this important activity. Sometimes a waste management strategy is lacking.
  - (iii) Better sanitation conditions—at several colleges visited, emptying of septic tanks is practically impossible because tank lids are partially covered by constructions. Where lids could be opened, the local governments do not provide a place to discharge the contents.

15. Consultations were held with communities and other stakeholders who will be affected by construction and expansion activities at colleges. They are aware of temporary disturbances and health risks. They support refurbishment and expansion of college facilities. They believe that such developments would benefit the area and increase the value of their property. No community visited is of the view that their land and other property would be affected negatively by the program activities.

#### c. Field Visits

- 16. Visits were paid to 16 colleges and national vocational training institutes as part of the assessment (footnote 2). The field visits confirmed most of the findings of the consultations. Some key issues observed and discussed during those visits are:
  - (i) seepage of septic tanks during floods and difficulties in opening them because of constructions on their lids;
  - (ii) drainage problems, especially during rainy season;
  - (iii) difficulties in segregating solid waste and difficulty in getting assistance from municipality offices (some colleges use colored bins to segregate solid waste);
  - (iv) lack of a solid waste managemnt plan within the college premises;
  - (v) lack of systematic collection of potentially hazardous waste from college premises; and
  - (vi) e-waste being a fast-growing problem at colleges—local governments do not have resources or the know-how to handle e-waste properly.
- 17. Most colleges had signboards emphasizing "Safety First" and wall charts with pictures explaining workers' safety issues. However, at no college the consultants found any industrial safety arrangements like eye protectors, gloves, covered saw blades, and protective footwear. At a few colleges visited, "home-made" electrical installations were noted that do not meet formal standards.

## d. Safeguard Policy and Regulatory Framework

18. In Sri Lanka, the policy and regulatory framework applicable to safeguards has two components—environmental protection laws and procedures; and land acquisition law, and resettlement and rehabilitation policies and guidelines. These two components interact and share several safeguard principles found in international best practices of safeguard compliance. The 2010 Regulations of the Land Acquisition Act bring together the best practices found in both components pertaining to involuntary resettlement.

#### 2. Environment

#### a. Laws and Regulations

19. NEA is the main law for environmental protection and was amended by Act No. 47 of 1980, Act No. 56 of 1988, and Act No. 53 of 2000. In 1983, a provision for conducting an environmental assessment of development projects was included in NEA. NEA also provides conservation and development guidelines for natural resources such as water, forest, flora, and fauna. NEA is also supported by the 13th Amendment to the Constitution of Sri Lanka, *Pradeshiya Sabha* Act No. 15 of 1987, State Land Ordinance Act No. 13 of 1949, Sri Lanka Land reclamation and development cooperation Act No. 15 of 1968, Act No. 52 of 1982, Act, Act No. 35 of 2006 National Water Supply and Drainage Board Law No. 2 of 1974, National Policy for Rural Water Supply and Sanitation 2001, Prevention of Mosquito Breeding Act No. 11

of 2007, Urban Development Authority Law No. 41 of 1978 (as amended by Act No. 70 and subsequent amendments), Forest Ordinance, Fauna and Flora Protection Ordinance, Coastal Conservation Act of 1980 and its amendments, Municipal Council Ordinance Act No. 29 of 1947 (amendment Act No. 18 of 1979 and subsequent amendments), and Urban Council Ordinance No. 61 of 1939 (Act No. 13 of 1979 and subsequent amendments). Other sector-specific environmental policies and laws such as the Water Management Law and Pollution Control Law become applicable depending on specific site situations. The policies, laws, and regulations governing environmental protection provide a satisfactory framework for the environmental safeguard compliance of the program.

### b. Enforcement, Review, and Grievance Redress

- 20. At the state level, the Central Environment Authority (CEA) is the key approval and enforcement institution of environmental safeguard requirements. CEA has provincial offices but they often lack the resources to carry out safeguard compliance functions. CEA appoints a project-approving agency (PAA) for each project that falls under the "prescribed project" list. The PAA will prepare terms of reference for an environmental assessment after holding "scoping" meetings to determine whether the assessment should be an environmental impact assessment or an initial environmental examination. The PAA is the government authority responsible for administering environmental assessments.
- 21. CEA is the apex agency that oversees the application of NEA and the adoption of good environmental practices in preventing environmental degradation and pollution in projects and programs. Advice, return of planning documents for revision, demand for more information and data, suspension, cancellation, and indictment of polluters are some of the powers that NEA has in dealing with safeguard noncompliance.
- 22. Complaints pertaining to environmentally adverse impacts are initially dealt with by project authorities. If project authorities fail to resolve them, the complaints are referred to the provincial CEA offices with the help of the line department and agencies. Delays in completing hearings are frequently noted. Resorting to the court system for redress is always an option available to a grieved party. CEA receives some 10,000 complaints from the public every year. The complaints mainly relate to dust, noise, and water pollution arising from industrial or commercial activities. CEA has not received any complaint against the TVET system. A few grievances a year reach the Court of Appeal for arbitration.
- 23. A grievance redress mechanism (GRM) is part of any project supported by international and regional development agencies such as ADB, International Finance Corporation, Japan Bank for International Cooperation, and the World Bank. The GRM is a bottom-up, multi-tiered structure starting from the division level and rising to district and national levels. The local environmental regulatory framework does not provide for an institutionalized GRM other than the web-based complaint window at the Government Information Centre. Complaints are recorded and handled by district offices, and several such complaints are arbitrated by CEA in Colombo. The ESMF of the program will explore establishing a GRM for program activities at district level and outline procedures of its establishment, functions, powers, membership and budget.
- 24. The environmental policies, acts, and regulations comprise a national framework for environment protection and sustainable development. This provides sufficient and comprehensive legal mechanisms to manage and mitigate potential safeguard risks associated with the program and to comply with ADB's environmental safeguard policy requirements.

#### 3. Involuntary Resettlement

# a. Policies, Laws, and Regulations

- 25. The key legal instruments pertaining to land acquisition and resettlement are the Land Acquisition Law of 1950 (LAA) and the National Involuntary Resettlement Policy of 2001 (NIRP). In 2008, the Ministry of Land and Land Development (MLLD) formulated the National Compensation Policy (NPPC) to recognize several international best practices pertaining to involuntary resettlement, such as the payment of market value for property acquired and the entitlement of nontitled land users to receive compensation and resettlement assistance. In 2010, the Parliament of Sri Lanka approved the detailed Land Acquisition and Compensation Regulations, which updated regulations of LAA and incorporated resettlement best practices in NIRP and the NPPC into the procedures for land acquisition, compensation, grievance redress and resettlement. Recent ADB technical assistance (TA) assessed both the "equivalence" and "acceptability" of the national land regulatory framework based on NIRP and NPPC, LAA, their regulations, and court decisions (which set precedent for future arbitration on land acquisition disputes, compensation and rehabilitation issues). The MLLD published the new land regulatory framework—Land Acquisition and Implementation of the National Involuntary Resettlement Policy, A Guide for Public Officials on Good Practices. The TA found a high level of congruence (80% to 85%) between the current land regulatory framework and the involuntary resettlement best practices enshrined in the SPS. The MLLD will initiate the process to incorporate these policies and regulations into the Land Acquisition Act. Some key areas that need further legal consideration are income improvement of the poor and vulnerable affected persons, monitoring and assessment of resettlement outcomes and their impacts, and disclosure of resettlement planning documents.
- 26. The TA also conducted several stakeholder workshops to discuss the revised and improved land regulatory framework, identify gaps, if any, in the regulatory framework, and share knowledge on how to apply it to development interventions. The new regulatory framework superseded all ad hoc and special compensation and resettlement and rehabilitation packages followed by different ministries. The secretaries of divisional administrations took part in special training programs to learn about the new regulatory framework, discuss their difficulties in using it in some areas, and discuss budgetary and other resource constraints.

#### b. Enforcement, Review, and Grievance Redress

- 27. Procedures for land acquisition, compensation payment, and relocation are managed by the MLLD and various other government agencies. Both the MLLD and CEA review resettlement plans. Land acquisition and compensation programs are initiated and completed by divisions (subdistricts), and a few cases on appeal reach the Review Board or the courts.
- 28. A GRM is built into the NIRP and the regulations of 2010. It is applicable to all projects and programs regardless of the sources of finance. As in the case of the environment, the GRM is a bottom-up, multi-tiered structure (para. 22). The membership, powers, and duties of the GRM change from project to project. GRM records are kept and sometimes used in higher-level arbitration and court cases. Any grieved party could seek the courts' assistance for redress.
- 29. While the policy and regulatory frameworks for environmental and social safeguards are satisfactory, weak institutional capacity, particularly among local authorities, is an impediment to effective implementation of safeguard requirements. The program will particularly deal with this

issue by developing a comprehensive ESMF and through the program action plan.<sup>4</sup> The ESMF will provide guidelines, tools, and assessment methodologies to screen and identify safeguard impacts of subprojects of the program, prepare appropriate plans, implement and monitor them, and establish GRMs.

# c. Responsibility for Safeguard Compliance of the Program

- 30. Managing the TVET system, including safeguard compliance, is the responsibility of MSDVT. MSDVT and its affiliated institutions have designated staff to deal with safeguards, particularly environmental safeguard issues. The colleges have no designated functionaries for safeguard application and compliance. Those who are designated to ensure safeguard compliance are generally dedicated personnel, but their activities are thwarted by lack of resources and the multitude of their daily activities.
- 31. No systematic training or awareness-raising programs exist at any level with regard to safeguard application and compliance. Some safeguard training of staff did take place under other programs, but it remains uncertain what practical and long-term impacts that training had on daily operations of TVET institutions and colleges. (See section D and the additional information document [footnote 2] for more detail.)

# D. Safeguard Program Actions

- 32. The PSSA shows that national safeguard policy and regulatory frameworks can ensure effective application of environmental and involuntary resettlement safeguards in the formulation and implementation of safeguard planning instruments. However, a safeguard planning and implementation risk arises from the low level of awareness and capacity of TVET personnel, teachers, and college managers regarding safeguard principles and their application. The program needs to overcome these capacity deficiencies and weaknesses.
- 33. MSDVT will establish a safeguard cell at its headquarters with an environmental and social safeguard specialist who has some field experience in similar work. He/she will act as the focal person for the safeguard aspects of all program-related activities. The cell will be supported by focal points appointed at affiliated institutions and colleges. It will mainstream safeguard requirements for all activities under the program and make critical interventions to facilitate safeguard compliance. The cell will formulate the outlines of safeguard planning instruments, which will be followed by colleges, and local government agencies in approving and applying building permits and implementing construction activities related to the program.
- 34. Screening for environmental and social safeguard impacts and the formulation of appropriate safeguard planning instruments could be outsourced. However, the safeguard cell at MSDVT will remain responsible for quality, implementation, and monitoring. The database at MSDVT should hold all important safeguard data and they should be easily assessable for planning and monitoring of safeguard compliance.
- 35. Meaningful consultations and interaction between colleges, and colleges and their nearby communities, are to be established. The planning of remedies and mitigation measures for environmental impacts can be done in consultation with the communities. This would enhance the communities' ownership of any mitigation measures. In this regard, the

<sup>&</sup>lt;sup>4</sup> Program Action Plan (accessible from the list of linked documents in Appendix 2).

establishment of a GRM for each program activity is also helpful. Complaint proceedings and the outcome of inquiries are to be recorded and shared with the grieved parties.

- 36. Knowledge sharing and training programs will be the key vehicle of increasing awareness of safeguards among MSDVT, its affiliated institutions, local governments, and colleges. The safeguard cell will prepare training programs in consultation with Sri Lanka Resident Mission and agencies participating in the program. As part of the training, handbooks, manuals, checklists, and safeguard plan templates will be prepared in Sinhala and Tamil and distributed at MSDVT, its affiliated institutions, local government offices, and colleges (footnote 2). This activity could be outsourced.
- 37. The lack of coordination between MSDVT and the private sector is a key issue that needs the attention of MSDVT and its affiliated institutions. Establishment of a robust arena for such an interaction would facilitate the transfer of current industrial standards from the private sector to the TVET sector. Moreover, such interaction and coordination would benefit college students who aspire to enter the employment market. Both parties would also benefit from sharing safeguard best practices and the experience made in their development efforts.