Contract Number: 169-C-00-11-00102

Project: Sustainable Local Development Project in Serbia

Contractor: Chemonics Inc.

USAID COR: Mr. Sinisa Cadjo

Issuance Date: August, 2015

Document Title: Environmental Review Checklist for Identifying Potential Environmental Impacts for Nis Drying Center

Author: Chemonics International Inc

This publication was produced for review by the United States Agency for International Development. It was prepared by Chemonics International Inc. The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

ENVIRONMENTAL REVIEW CHECKLIST FOR IDENTIFYING POTENTIAL ENVIRONMENTAL IMPACTS OF PROJECT ACTIVITIES AND PROCESSES

for: Establishment of a service processing center for fruits and vegetables drying in Nis

Implemented under: Sustainable Local Development Project (SLDP)

DCN: 2013-SRB-022

Prepared by: Chemonics International Inc

The Environmental Review Checklist for Identifying Potential Environmental Impacts of Project Activities and Processes (ERC) is intended for use mainly by implementing partners to: assess activity-specific baseline conditions, including applicable environmental requirements; identify potential adverse environmental effects associated with planned activity(s) and processes; and develop environmental mitigation and monitoring plans (EMMPs) that can effectively avoid or adequately minimize the identified effects. This ERC can also be substituted for other ERC versions that may have been attached to project initial environmental examinations (IEE). If implementing partners are in doubt about whether a planned activity requires preparation of an ERC, they should contact their Contracting Officer's Representative (COR)/Agreement Officer's Representative (AOR) for clarification.

A. Activity and Site Information

Project Name: ***(as stated in the triggering IEE)***	Sustainable Local Development Project (SLDP)
Mission/Country:	**Republic of Serbia**
DCN of Triggering IEE:	*2013-SRB-022*
Activity/Site Name:	Establishment of a service processing center for fruits and vegetables drying in Nis
Type of Activity:	Facility Assessment and Design
Name of Reviewer and Summary of Professional Qualifications:	Pedja Cerovic, Agribusiness Specialist
Date of Review:	August 24, 2015

B. Activity Description

1. Activity purpose and need

The USAID Sustainable Local Development Project (SLDP) is a six-year program designed to support Serbian local governments, businesses and civil society organizations to increase their efficiency and achieve economies of scale through Inter-Municipal Cooperation (IMC) aimed at accelerating economic growth. SLDP's core activities are focused on supporting inter-municipal partners to expand the private sector, add jobs and reduce unemployment in regional economies. Within the SLDP, the eight IMC partnerships have been established by 32 local governments. Accordingly, SLDP has developed eight sector specific inter-municipal programs, one for each of the eight established IMC partnerships, which will proximately add jobs to IMC areas by expanding their private sectors. These inter-municipal programs were identified under a set of SLDP, business-oriented criteria, and their execution includes all three following components of SLDP:

1. Inter-Municipal Cooperation Programming
2. Public Administration Reform
3. Youth Development and Participatory Mechanism

Under component 1, SLDP supported establishment of Inter-Municipal Cooperation (IMC) between the cities of Nis and Leskovac and municipalities of Merosina, Doljevac and Gadzin Han and developed IMC program named "Grow South" which targets a 15% increase in processed food products sold. Keystone of the proposed program in Nis-led IMC area is to develop regions' agribusiness food processing potential in order to add jobs to the region.

The subject of this Environmental Review Checklist is the project initiated in the City Of Nis. As part of the program "Grow South", SLDP supported the Department of Agriculture and Rural Development (hereinafter referred to as DARD) of the City of Nis and partner municipalities to establish the Food Processing Support Center for the Nis-led IMC region. The Food Processing Support Center has the general purpose of providing focused institutional support and coordination to help local farmers and food processors improve cooperation, secure the value chain, add value to their produce, identify new and profitable market opportunities, and increase sales in both national and export markets.

Food Processing Support Center as a newly formed unit of the DARD of the City of Nis decided to help the region's small-scale growers add value to their crops. Their findings indicated that much of the primary agricultural products in the region should be processed and marketed as value added products, rather than as a raw material, which is the usual practice at the local farmer's market. A particular problem for fruits and vegetables farmers is the lack of proper storage and processing facilities, so they must sell perishable primary products immediately after the harvest, sometimes below the market price to avoid crop decay and total loss of income. Recently completed research on the agricultural competitiveness of the Nis-led IMC area showed that fruits and vegetables are by far the most competitive sector, and more attention should be paid to creating value added products such as dried fruits and vegetables. Drying of fruits and vegetables, especially fruits, has economic justification from the viewpoint of the available quantities in the IMC area, trends in production, and market demand. Farmers are reluctant to invest in processing capacities, not only because of the lack of funds, but also due to improper value chain organization, lack of technological knowledge and practice, and poor understanding of the market for processed food.

Having all that in mind, the Food Processing Support Center in Nis plans to establish a successful model of a small-scale public service processing center that will be leased to selected farmers groups to add value to their produce by drying and preliminary processing. Producer groups selected through a public competition will be also provided training in the technological process of drying fruits and vegetables. The service processing center will be owned by the local government of the City of Nis, and its operations as well as the work of the user producer groups will be managed and supervised by the Food Processing Support Center staff throughout the fruit drying operations. This will provide an opportunity to producer groups to better organize the value chain, conquer the technological process and reach to more reliable and lucrative markets, with minimal risks involved. Farmers winning the fruits and vegetables drying technologies and markets for processed foods will be further motivated to invest in their own small-scale processing facilities.

2. Location of activity

Macro location: Serbia, City of Nis

Nis is a city in Nisava District in Serbia, situated on the Nisava River near the spot where it joins the Južna Morava River. The City is located at the 43°3' latitude north and 21°9' longitude east. The central City area is at 194m altitude above sea level (the main city square). The highest point in the City area is Sokolov Kamen (Falcon's rock) on Suva Planina Mountain (1,523m) while the lowest point is at Trupale, near the mouth of the Nisava River (173m). With more than 260,000 inhabitants, it is the largest city of the Southeastern region of the country and the administrative center of the Nisava District. According to the data from 2011, it is the second-largest city in the country after Belgrade and before Novi Sad. The City area covers the territory of about 597 square kilometers which encompasses the five municipalities with its 72 suburban and rural settlements.

Table 1. Basic information about settlements and municipalities in the City of Nis, 2013

Municipality	No. of settlements	No. of urban settlements	No. of other settlements
The Municipality of Medijana	1	0	1
The Municipality of Niska Banja	18	1	17
The Municipality of Palilula	16	1	15
The Municipality of Pantelej	13	1	12
The Municipality of Crveni Krst	24	1	23
The City of Nis	**72**	**4**	**68**

Source: SORS, Census conducted in 2011

Table 2. Basic data about the municipality/town and district (area and population), 2013

Municipality	Area in km²	Agricultural area in ha	Population
The Municipality of Medijana	10	785	85,969
The Municipality of Niska Banja	145	7,410	14,680
The Municipality of Palilula	116	7,510	73,801
The Municipality of Pantelej	142	9,258	53,486
The Municipality of Crveni Krst	184	12,906	32,301
The City of Nis	**597**	**37,869**	**260,237**

Source: SORS, Census conducted in 2011

The City of Nis lies on the crossroads of the most important Balkan and European traffic routes, also known as the"Gateway to the East and the West", connecting Europe to the Middle East and the Black Sea to the Mediterranean. The territory of the City is intersected by two most important highways in this part of Europe. The trunk road, known as Pan European corridor 10 runs from the north down the Morava River valley and divides into two major traffic lines. The south line, known as highway E-75 (Belgrade-Skopje), leads to Thessalonica and Athens along the Vardar River valley in Macedonia, connecting central and Western Europe with Greece and Macedonia. The east line, known as highway E-80, runs along the Nisava River and the Maritsa River in Bulgaria, leading towards Sofia and Istanbul, and further on, towards the Near East. Highway E-75 that leads to Belgrade and Athens, lies only 2.5 km to the north, and can easily be accessed from both directions of the regional freeway R214.

Some approximate distances between the City of Nis and major cities in the region are: Nis - Belgrade (Serbia) 235 km, Nis - Sofia (Bulgaria) 151 km, Nis - Skopje (Macedonia) 212 km, Nis - Thessaloniki (Greece) 396 km, and Nis - Istanbul (Turkey) 986 km. Nis is, also, relatively close to two Danube ports: Smederevo (163 km) and Kladovo (239 km). The nearest border crossings are with Bulgaria (100 km) and Macedonia (160 km).

The City of Nis has operational international airport (Constantine the Great), the second largest passenger and cargo center in Serbia. The airport was completely renewed in 2003. Since then, it has operated international flights to Montenegro, Switzerland, and Turkey. The current tendency is to reintroduce traffic to other European locations. The City also has developed railroad system (Belgrade-Nis-Thessaloniki-Athens and Belgrade-Nis-Sophia-Istanbul railroads).

Figure 1a - Location of the City of Nis

Figure 1b - Location of the City of Nis

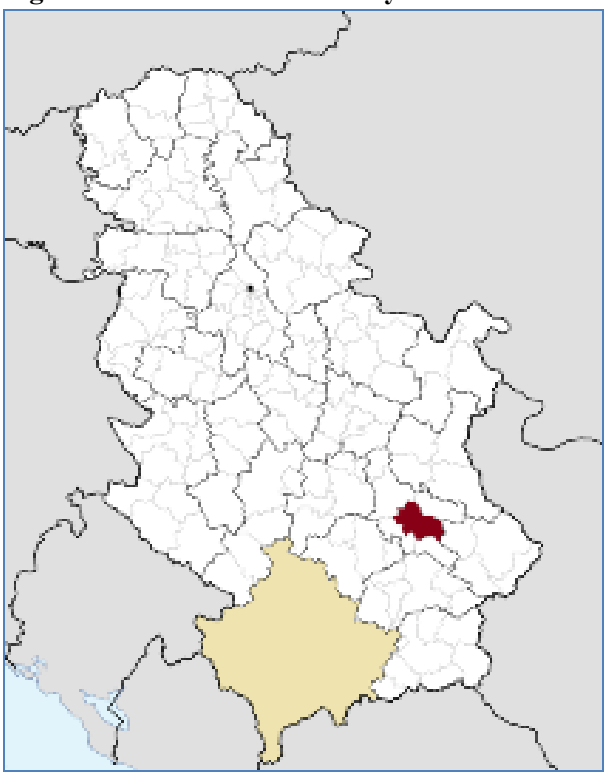


Figure 2 - Main Transit Roads through Leskovac

Figure 3 - Schematic view of micro location of planned service center for drying

Micro location: Municipality of Pantelej, Village of Donji Matejevec

The location of the planned service center for drying is in the sub-urban/rural area of the City of Nis, in the village of Donji Matejevac located 7 km northeast of the center of the City in the municipality of Pantelej. The service center for drying will be established in an existing building of the old local Cooperative Centre owned by the City of Nis and within the boundaries of the General Urban and Spatial Plan of the City.

According to the census from 2011, Donji Matejevac has 305 households with approximately 700 adult residents.

The North geographical width of the village is 43° 21' and the East geographical longitude is 21° 57'. Geographical coordinates of exact location of the building of future service center for drying in Donji Matejevac are 43° 21' 39.86" North, 21° 57' 3.18" East.

Figure 4 - The layout plan of the existing building

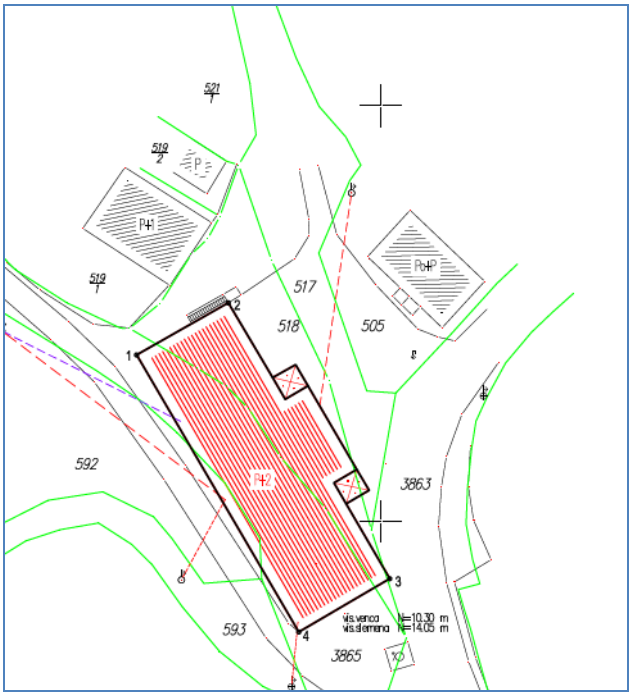


Figure 5 - Draft of the southeast lateral facade

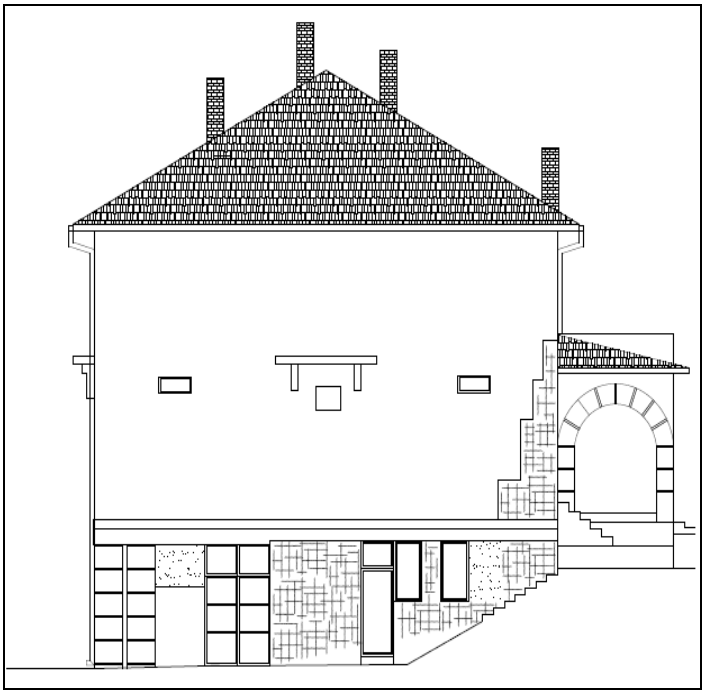


Figure 6 - Draft of the southwest frontal facade of the building with the access to the basement entrance

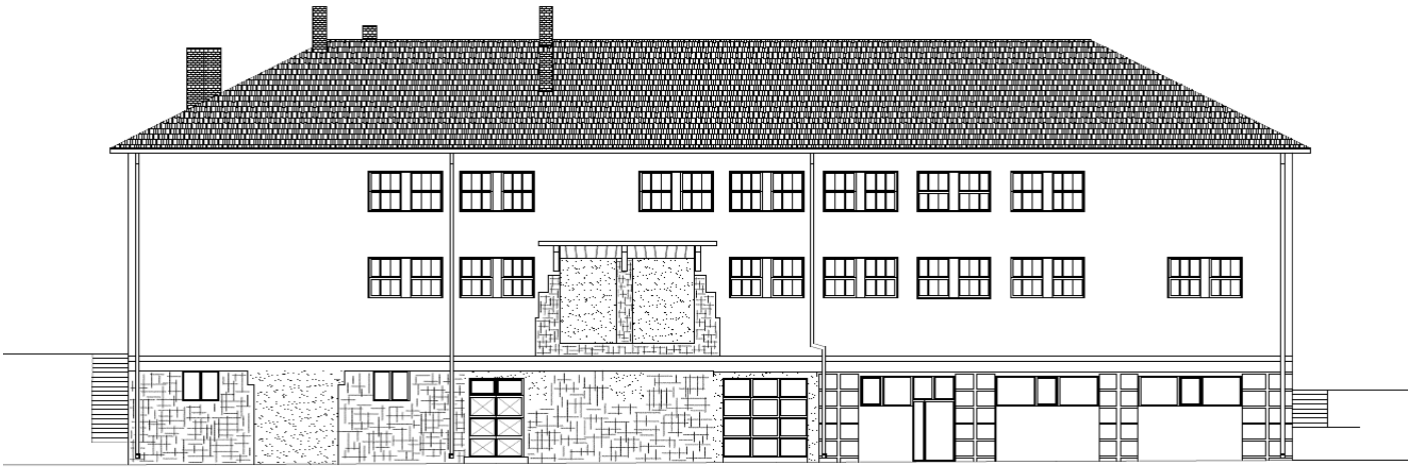
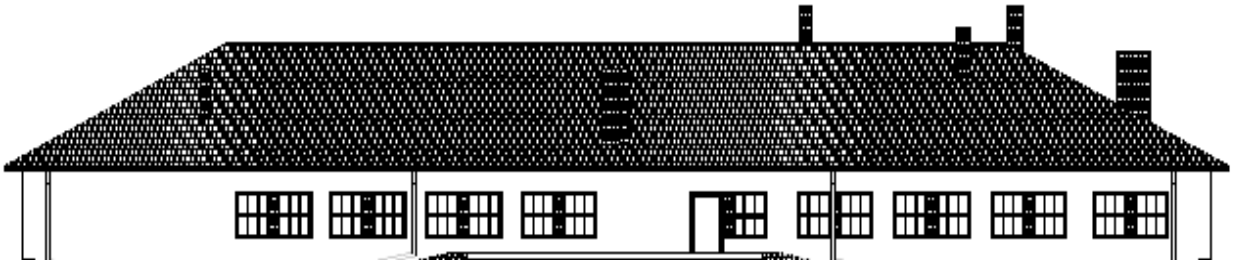


Figure 7 - Draft of the northeast frontal facade of the building with the access road to the 1st floor

Rep



3. **Detailed description of activity and site**, e.g., size of the facility or hectares of land; steps that will be taken to accomplish the activity

The premises of the building of old local Cooperative Centre in Donji Matejevac, where the service center for drying will be established and drying equipment installed were selected by the DARD of the City of Nis due to the fact that the largest concentration of fruit growers is in this part of the Nis region. Therefore, convenience considerations to optimize joint usage, as well as the safety and size of the building, were the main preconditions in selecting a location for the dryer.

The building, by decision on the allocation of premises issued by the Mayor of the City of Nis in December 2014, was allocated to the Department for Agriculture of the City of Nis for the purpose of establishing a multifunctional agro-resource center for farmers, and within it, a drying facility for fruits and vegetables. The building of the Cooperative Centre in Donji Matejevac consists of a basement area of 394.70 m2, space on the ground floor area of 369.52 m2, and a room on the first floor of the area of 161.84 m2 envisaged for the drying operations.The goods will be directly transported to the first floor from the main road on the northeast frontal side of the building. On that side of the building, the ground level and the access road are located at the same level as the first floor and its entrance doors (Figure 7 and photos 3 and 4). Therefore, the first floor can be only accessed directly from that side of the building and this will be the only loading and unloading point for the goods and products from drying operations. The other frontal side of the building, the southwest side (Figure 6 and Photos 1 and 2), has the ground level and access road located at the lower level. Therefore the basement area can be accessed only from that side.

The City has hired a consultancy company and a technology engineer as a certified designer, to create the main technological project of the fruits and vegetables drying process and installation of a tunnel dryer, with maximum capacity of up to 3,000 kilograms of raw fruits and vegetables in 24 hours during the peak drying season. The project envisages the complete production process, from entering the raw material into the facility, preparing for drying, drying, to packaging the final product in retail packaging. Based on the technological project of drying fruits and vegetables, the authorized and licensed architectural firm engaged by the City of Nis has produced the main project design for the reconstruction and renovation of the building of the Cooperative Centre in Donji Matejevac for the purpose of establishing a service center for drying fruits and vegetables.
Through public procurement, the City of Nis selected and hired a contractor for the reconstruction and renovation of the building, all building permits have been obtained, and the works started on May 4, 2015. The first phase, which includes enabling of the first floor where the tunnel dryer will be installed, is scheduled in 45

calendar days, i.e. no later than 20 June 2015 as the expected date of completion of these works. The first phase has been completed in full, the internal water supply, sewage and electricity networks on the first floor are finished, and it only remained to conduct the connection to the appropriate external networks that are under the jurisdiction of the city communal services company and the state owned electricity distribution company. The contracts have been signed with both companies, all connection costs paid, and they need to carry out the connection works which are expected in September 2015. Tender for the selection of contractor for the second phase is completed, offers are evaluated, and the contract should be signed and works started by mid-September 2015. The second phase includes repair works on the old interior walls and installation of new windows and doors on the first floor, followed by concrete works on the second floor and reconstruction of the roof. Works in the second phase of reconstruction of the building are not a prerequisite for the installation of drying equipment, but are necessary for the beginning of drying operations in the center. The deadline for the works in the second phase is 60 days during which SLDP shall provide drying equipment. Start of the processing operations is expected for the next harvest season by late spring 2016.

Figure 8 - The layout plan - basis of the first floor where the drying operations will be established

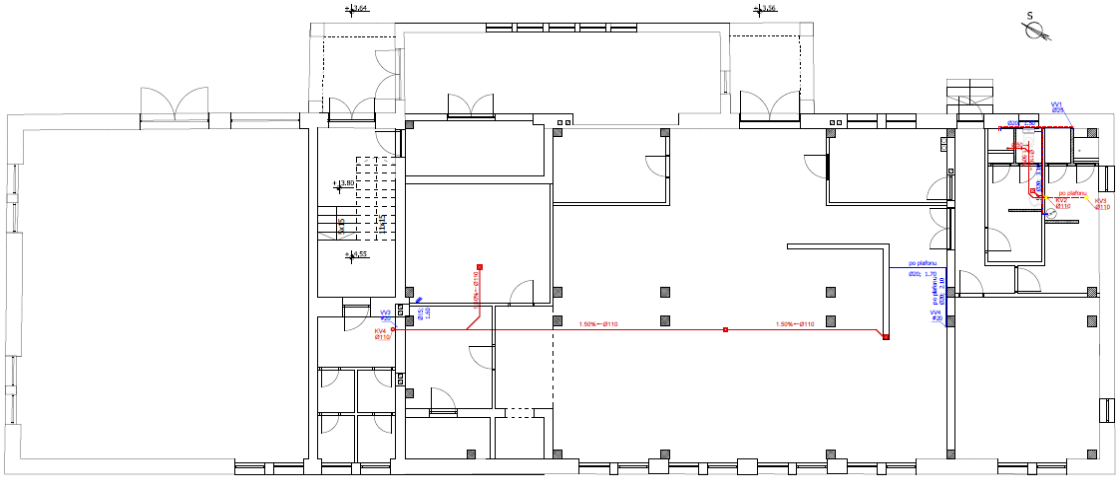
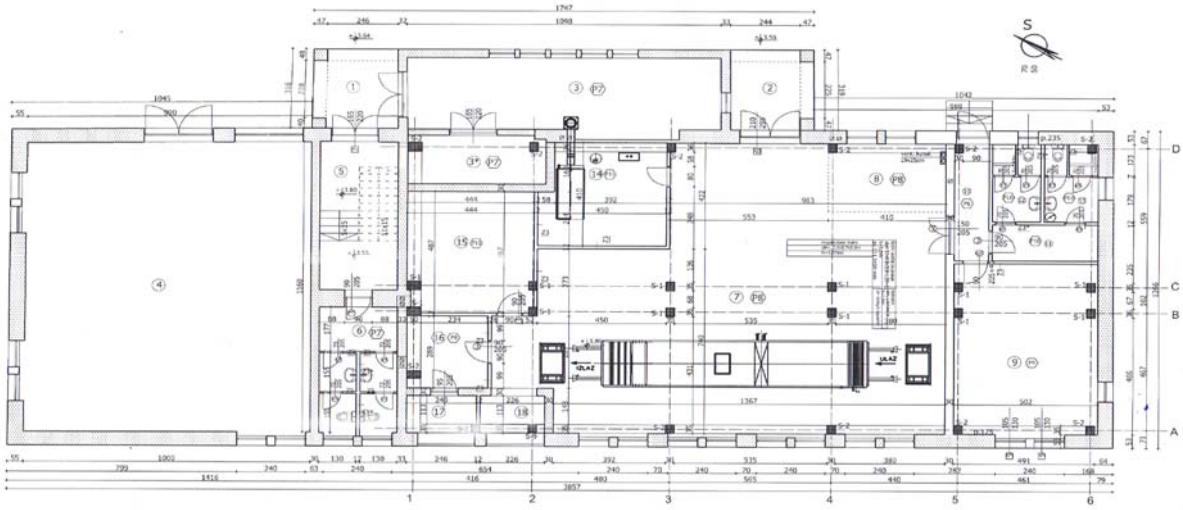


Figure 9 - The layout plan of the first floor with the position of tunnel dryer and other equipment



Detailed description of requested assistance

SLD Project has been requested to provide support to the DARD of the City of Nis by furnishing their envisaged Multifunctional agro-resource center for small-scale farmers with equipment for the fruits and vegetables drying operations. The first phase of the project envisages the establishment of the following stages of drying operations: reception and control of fresh fruits and vegetables, inspection, cleaning/washing, grading, and drying. The product obtained in this way is suitable for long term storage in normal ambient conditions because the very low water content prevents decay and spoilage of dried fruit and vegetable. In the service center, the selected producer groups will produce dried product that will further be placed to the companies/ packers engaged in further product finishing, packing, and distribution and sales.

The administration of the City of Nis is planning in the coming years, as the producer group masters the technology of processing dried fruits and vegetables and wins the market, to equip the service center with additional equipment that would close the entire drying process to the final product in retail packaging. Planned type of dryer is intended for drying of practically all types of fruits, vegetables, herbs, forest fruits and mushrooms. The selection of products that will be dried will depend primarily on the producer groups and growers who will use the drying facility. However, taking into account characteristics of farming in the region, recently completed research on the agricultural competitiveness of the Nis-led IMC area, and possibilities for growth of certain crops, the main crops that will be processed in the dryer are stone fruits (sour cherries, plums, and apricots), followed by some of the berry fruits (blackberries and raspberries), pome fruits (apples, pears, quinces), root vegetables (potatoes, carrots) and perishable vegetables (peppers, parsley, and parsnip). Due to the seasonal character of fruits and vegetables production, the Centre for service drying will not be in operation during the whole year. The Center will operate at full capacity only during the fruits and vegetables harvest season, up to five months annually at most, with a special engagement in July-September during the campaign of harvesting and drying. With a complete equipping of the planned Multifunctional agro-resource center for farmers in the coming years and by placing the cold chambers for storage, raw material for drying will be provided for most of the year and therefore the drying season extended.

SLDP will finance the purchase of equipment needed for the first phase of drying, which includes equipment for the preparation of fresh fruits and vegetables for drying and the universal tunnel dryer. Here is a detailed description of the equipment that will be procured, as well as the processes that procured equipment will perform:

a) Equipment for the preparation of fresh fruit for drying

Fresh fruits and vegetables immediately upon receipt in the drying facility should go through three basic preparatory operations - inspection, cleaning/washing, and sorting according to their size - and so are prepared to go further into the drying process. In order to carry out these preparatory operations for drying, the following equipment for inspection, cleaning, and sorting should be procured for the drying facility:

Inspection conveyor with variable speed - Inspection of the product is a technological operation that is a visual inspection of material for drying on the conveyor belt and manual removal of inadequate fresh fruits and vegetables. The fresh produce is spread on a belt in a single layer, and workers deployed on both sides of the belt manually remove inappropriate fruits. These can be used for composting as the Action Plan of the Strategy for Sustainable Development of the City of Nis for 2015-2020, defines composting as one of the medium-term goals for the agricultural sector. The current amount of composted organic waste in the area of City of Nis is 0% and the goal is to reach 18% in the next 10 years. The agricultural and rural department of the City of Nis is planning to support establishment of a composting demonstrative site in the area. One of the options is to establish a composting demonstrative site within the area of the future multifunctional agro-resource center for farmers in

Donji Matejevac, where the dryer will be installed, or at farms of the users of the center. This would provide the basis for the beginning of organized and integrated system of organic waste composting in the area, including not only the organic waste derived from the drying operations, but also from small-scale farmers' activities.

The speed of the inspection belt is controlled by the speed adjustment device according to the presence of inadequate fruits. The nozzles can be placed above the belt for water for final washing of fruits as well as separate lighting for better visual control of the material. The inspection belt is in front of the washing device because sub-standard fruits must not get into the washer and pollute the water. After the inspection, the correct fresh fruits and vegetables fall to the next device, a device for washing, and defective fruits are placed in the cart next to the conveyor for further inspection and finishing.

Washer of fresh fruits and vegetables - Washing of raw fruits is a technological operation that must be applied in the processing of fruits and vegetables because the health safety of the finished product depends on it. A device for washing consists of a washing tank for rough washing, a conveyor belt with the sloping conveyor, and a series of nozzles for fine washing and rinsing. Insertion of fresh fruits in the tank is done manually. Washing of fruits is done in a tank with continuous addition of fresh cold water and by bubbling, using strong air currents blown into the tank through a system of perforated pipes laid on the bottom of the tank. The air is injected using a centrifugal fan that is an integral part of the unit. The water in the pool is continuously bubbled, resulting in a constant movement of raw material in the water and accelerating the process of washing.

From the tank, the washed fruits and vegetables are taken out by the sloping conveyor that runs under the shower with cold water, rinsing residual impurities; this is known as fine washing. The unit is made of stainless steel plates and profiles with the corresponding connectors for water supply and drainage, and an air fan and separate power to run the belt consisting of electric motors and gears. All parts that come into contact with raw materials are made of materials whose application is approved for use in the food industry based on State Law on Food Safety and HACCP standard.

Fruit and vegetables sorting machine for separation / calibration of fruits according to size - Calibration or separation of fruits by size is aimed at placing fresh fruits of approximately the same size on drying racks. A fruit sorting machine will be located in the drying facility as the extension of the washing machine. The unit should have calibration adjustment depending on the desired diameter of the fruits and vegetables and the ability to calibrate up to four sizes/ grades depending on customer requirements. Each grade is dried separately, because the uniform fruit size allows for smoother and better drying.

Proposed equipment is the most appropriate solution for the preparation of fresh fruits and vegetables for drying. However, given the not-so-big planned drying capacity, some preparatory operations could be performed even manually on the less expensive equipment. Visual inspection of material for drying could be done on ordinary inspection tables instead on inspection conveyor with variable speed. The calibration of fruits per size can be done on screens/ sieves and other specially designed tools for this purpose, or even manually on ordinary inspection tables. The use of these solutions reduces the budget for the procurement of equipment but on the other side considerably increases labor costs for carrying out the processes, reduces the production efficiency and the quality of final product.

The capacity of the equipment for the preparation of fresh fruits and vegetables for drying should correspond to a daily capacity of drying a maximum 3 tons in 24 hours in a continuous tunnel dryer. Estimated capacity of the equipment for preparation of raw material for drying is about 500 kg/h. These are small-scale and non-industrial capacities of the subject equipment, tailored for small-scale producers.

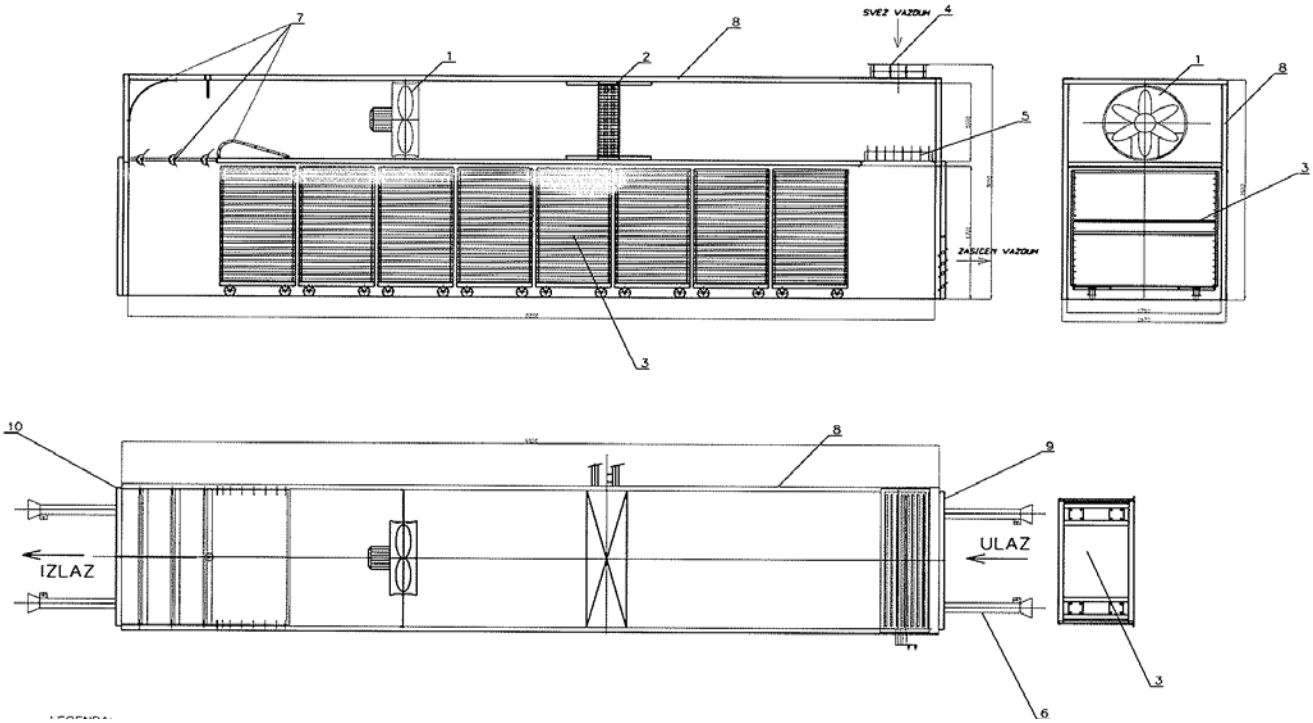
b) Universal tunnel dryer with continuous operation and indirect heat transfer

Description and technical specification:

- Daily capacity is maximum 3,000 kilograms of raw material in 24 hours

- Possibility for drying fruits, vegetables, mushrooms and medicinal and aromatic plants.
- Prefabricated, mounting dryer with steel structure.
- Walls made of insulated polyurethane panels (50mm thick) coated on both sides with galvanized non-ferrous metal sheet.
- All metal parts of the dryer construction protected by hot dip galvanizing.
- Tunnel type dryer with trolleys and metal racks for carrying raw materials. Metal racks are placed on trolleys which pass through the tunnel on rails/guides installed on the floor. The trolleys are operated by the electric motor with reduction gear.
- At the front of the tunnel is the trolley inlet door (entrance for trolleys carrying metal racks with raw materials), and at the back or side of the tunnel is the trolley outlet door (exit for the trolleys with dry material). The trolleys are loaded at the trolley inlet door and off-loaded at the trolley outlet door.
- It has sufficient number of work trolleys and metal racks for drying of raw material in the tunnel and additional trolleys and metal racks out of the tunnel for the off-loading of dry material and refilling of raw material to ensure continuous operation of the dryer. The number and the load capacity of trolleys and racks must ensure continuous drying of 3,000 kg of raw material for a period of 24 hours.
- Metal racks are made of stainless steel and stainless steel wire mesh intended for use in the manufacture of food products (per ISO 9000 standard for the food industry). Dimensions of the wire mesh are suitable for drying various kinds of fruits, vegetables, herbs and mushrooms, and allow for easy removal of organic residues from previous drying. Even though the amount will be minimal, almost insignificant, it can be added to the compost if composting is organized within the Center.
- Drying of raw materials is carried out by hot air. The dryer has a unit, hot water boiler as thermal energy generator for the production of thermal energy for heating the hot air for drying. The unit has heat exchangers for the transfer of produced heat and heating of the fresh air. Heat exchangers are made of copper aluminum alloy and are placed in the ceiling part of the dryer in the recirculation channel. The unit uses solid fuel wood and biomass. The unit is in a physically separate and heat-insulated area in the dryer or in the room of the dryer. It is made of boiler-grade steel and has all the necessary equipment and infrastructure for supply and drainage of water.
- The dryer is indirect; the unit for the production of thermal energy is designed to not allow the mixing of flue gases and combustion products with the air for drying.
- The air temperature and the air flow in the tunnel are controlled by a combination of fans, dampers/louvers and chimney.
- It has automatic air-temperature control through via thermal regulator, for adjusting of drying for various materials (fruits, vegetables, mushrooms and herbs). The flow and transport of air in the tunnel is achieved by a fan mounted in the ceiling part of the drying chamber. The air flows in the opposite direction to the direction of movement of the trolleys and is evenly dispersed in a drying tunnel at the horizontal and vertical level. The recirculation of air in the drying chamber (control of the intake of fresh air and expulsion of saturated air) is allowed in the range of 0 to 100%, which is controlled manually.
- Built-in fan in the chimney of the dryer to extract the products of combustion from the furnace of the unit, which allows for better fuel combustion and heat transfer in exchangers.
- The operation of the dryer is regulated by automatic measuring and control instruments located in the electrical power command box / control panel, to manage and control the work of the drying chamber. The command box contains a regulator of the rotational speed of the motor of the fan in the ceiling part of dryer, which serves for the adjustment of air flow speed to the different materials which are dried. The box also contains a command of the electric motor that drives the trolleys in the tunnel as well as measuring and control equipment for boiler operation.

Figure 10 - The layout plan of the first floor with the position of tunnel dryer and other equipment



1. Fan assembly; 2. Heat exchanger; 3. Trolleys with metal racks; 4. Regulator of the fresh air intake; 5. Air circulation regulator; 6. Rails for the trolleys; 7. Air directing metal sheets; 8. Body of the dryer; 9. Inlet door; 10. Outlet door.

Table 3 - Preferred technical features of the required tunnel dryer

Type	Unit	Quantity
Dimensions of the body of the dryer:	mm	
• length		9.320
• width		1.870
• height		3.000
Dimensions of the tunnel of the dryer:	mm	
• length		9.200
• width		1.750
• height		1.700 + 1.000
The chimney height	mm	10.000
Insulated panels thickness	mm	50
Number of trolleys	pieces	9
Number of metal racks	pieces	162
Number of metal racks per trolley	pieces	18
Size of metal racks	mm	1.600 x 850
Effective surface area of drying per one metal rack	m2	1,24
The quantity raw material per metal rack	kg	20
Operating temperature of the drier	° C	80
Temperature of the combustion products at the exit of the chimney	° C	170-220
Energy/ water heat	° C	110/90
The required amount of water	L	500

Operating pressure of the dryer thermal energy generator / boiler	Bar	1,5
Installed thermal power of the thermal energy generator / boiler	kW	200
Installed power of electric motors:	kW	
• main fan-motor for air flow in the tunnel		7,5
• fan-motor for insertion of fresh air for combustion		0,37
• fan-motor for flue gases in the chimney		0,55
• electric motor with reduction gear to move trolleys		3
Maximum airflow rate of the main fan-motor	m3/h	30.000

The drying technological operations must be placed and equipment installed in a facility that has sufficient size and height to accommodate the tunnel dryer and equipment. A flat concrete floor must be constructed in the rooms where the drying operations will take place, with specific modifications to allow installations of a mechanism for pulling the trolleys in the tunnel dryer as well as appropriate water supply and drainage connections. Also, suitable power supply connections to the equipment must be provided and adequate chimney and lightning rod installations. All construction and infrastructure works required for the installation of drying equipment are included in the main project design and reconstruction works on the facility of the Cooperative Centre in Donji Matejevac.

4. Implementation timeframe and schedule

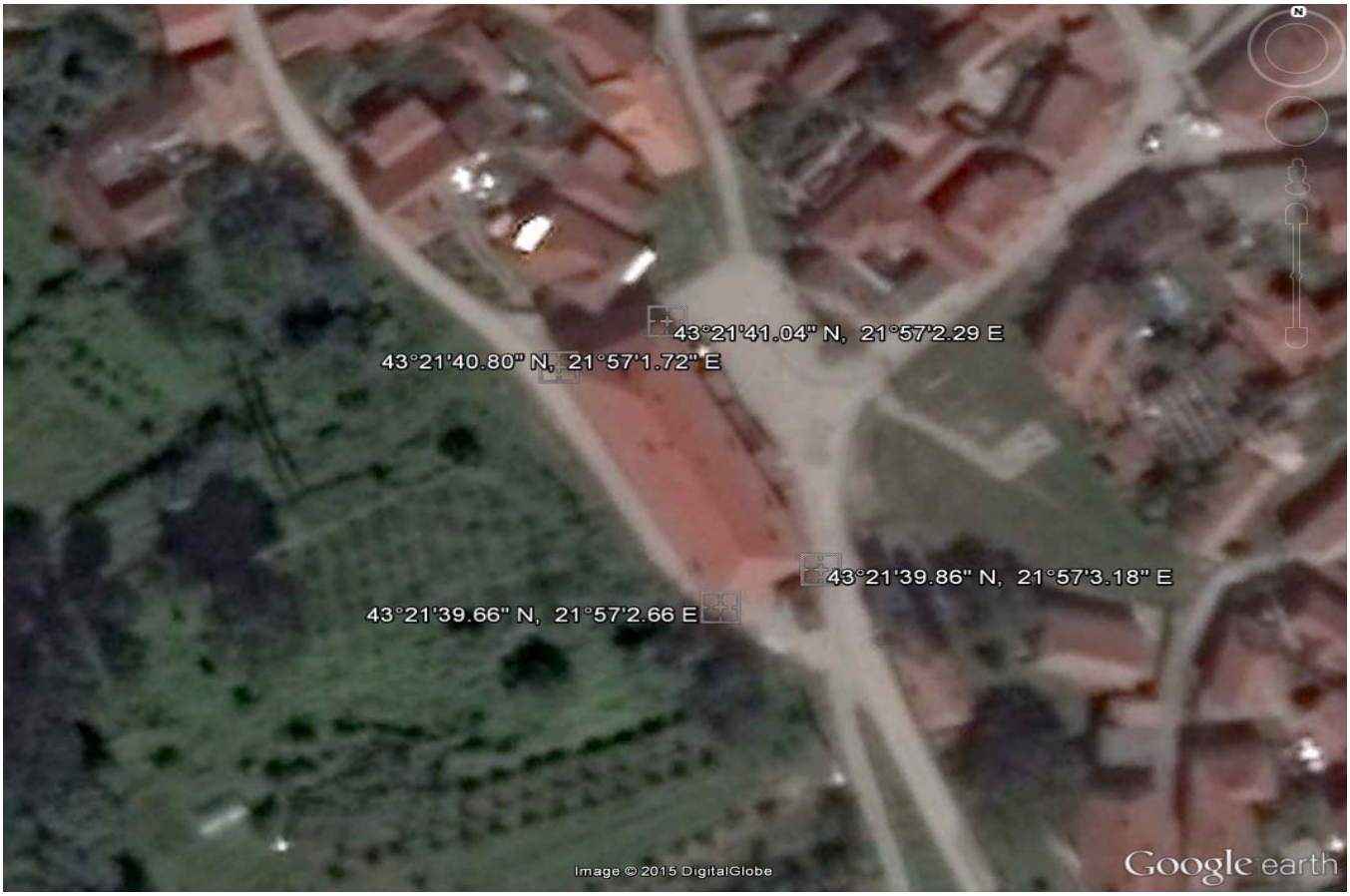
Time frame and schedule of reconstruction works on the building are described on page 18. Procurement and installation of the drying equipment will be scheduled for delivery in late February 2016. It is anticipated that a tender will be forthcoming and a manufacturer selected as soon as possible, contingent on environmental approval from USAID. The tender will allow one month for construction and delivery of the equipment.

5. **Existing or planned certifications** (e.g., ISO 14001 EMS, ISO 9000, HACCP, SA 8000, Global Gap, Environmental Product Declarations, Eco Flower, EcoLogo, Cradle to Cradle, UL Environment, GREENGUARD, Fair Trade, Green Seal, LEED, or various Forest Certifications)

There are no existing certifications of the facility and the processing operations, given that the planned drying operations have yet to be established by equipping the facility, which is the primary goal of this project. After the launch of fruits and vegetables drying operations, as a holder of the project, the DARD of the City of Nis, jointly with selected users of drying facility, will organize all drying processes in accordance with HACCP principles as a legal requirement under the Law on Food Safety of Republic of Serbia. However, HACCP certification for the processing of plant products is not required by the local Law and will be obtained only at the specific buyers' request.

6. Site map

Figure 10 – Satellite Image of the Project location



7. Photos of Site

Photo 1-Southwest frontal facade of the building - Basement entrance doors

Photo 2- Southwest frontal facade of the building - Basement entrance doors

Photo 3-Norththeast frontal side of the building-
1st floor entrance door

Photo 4-Norththeast frontal side of the building-
Start of the reconstruction works

Photo 5-1st floor, before reconstruction March2015

Photo 6-1st floor, before reconstruction March2015

Photo 7-1st floor, reconstruction, June 8, 2015

Photo 8-1st floor, reconstruction, June 8 2015

Photo 9-1st floor, reconstruction, June 30 2015

Photo 10-1st floor, reconstruction, June 30 2015

C. Activity-Specific Baseline Environmental Conditions

1. Population characteristics

According to the last census in 2011, the whole municipal area of the City of Niš (including both, urban and rural parts of municipality) has a population of 260,237, while the population of urban Niš is 187,544 or 72% of total population. Total population of the City makes 3.6% of the population of Serbia and 69.1% of the population of Nisava District, residing in five urban municipalities. The majority of inhabitants are Serbs. Other significant ethnic groups include Roma, Montenegrins, Bulgarians, Croats and Yugoslavs.

Table 4 - Demographics of the City of Nis (2011 Census)

Ethnic group	Municipal	Urban
Serbs	243,381	174,225
Roma	6,996	5,490
Montenegrins	659	579
Bulgarians	927	741
Yugoslavs	202	202
Croats	398	344
Others	7,674	1,963
TOTAL	**260,237**	**183,544**

According to the last census, Donji Matejevac has 860 inhabitants, of which 710 adult residents. The average age is 42.7 years (42.1 for men and 43.2 for women). The village has 305 households, and the average number of members per household is 2.82. This village is largely populated by Serbs.

2. Geography and Climate

Geographical position of the City of Nis has been already explained in the section B. Activity Description, 2.Location of Activity, so it will not be described here again. The territory of the administrative area of the City of Nis has very favorable natural conditions (climate, relief and soil) for diverse agricultural and fruits and vegetables production. The relief of this area of the City of Nis is characterized by a combination of hilly mountainous character the north and south, and lowland character in the central part of the area. Geological-morphological diversity is one of the fundamental characteristics of Nis region. The north and east of are dominated by Mesozoic limestone, the south and west by metamorphic rocks. The area is the cut in the direction northwest-southeast by the Balkan and Rhodope tectonic dislocation.

Land/soil characteristics of the City of Nis are suitable for growing tobacco, grapevines, fruits, vegetables, olives and other crops. The soil layer (production layer) for the territory of Nis has the following ratio: alluvium and chernozem soils (148.24 km2, 24.8%) with high ground water and other appropriate edaphic factors that have

the greatest potential for fruit and vegetables production, smonitza soil (128, 64 km2, 21.6%) characterized by an average or slightly better potential fertility, gajnitza soil (87.3 km2, 14.6%) of medium manufacturing capabilities, and terra rossa and podzolic soils (141.89 km2, 23.8%) clay-sandy and almost neutral soils that contain a lot of iron oxide which is why the red. Skeletal and skeletoidal soils, which make up about 15.2% (90.71 km2), are areas covered with sand, gravel, stone and rocks and fertility of these areas is insignificant and is now used as pasture.

Nis has a moderate continental climate (warm summers and moderately cold winters). The average annual temperature is 12.8 C (range 11.0-13.1 C). July is the warmest month of the year, with the average temperature of 22.8 °C. The coldest month is January, averaging at 0.4°C. The annual air temperature trend for the area of Niš in the period 1951-2008 was 0.4-1 C every 100 years, and in the period 1991-2008 as high as 6.5-7.5 C every 100 years. The average annual humidity in Nis is 70.4%, the highest in January (80.0%) and lowest in August (61.9%). Average value of precipitation is 579.8 mm/m2 (maximum in October, 67.8 mm, the least amount in February, 35.5 mm) and the average of the annual rainfall is 565.1 mm (annual range from 386 mm to 662 mm). There are 107 days with rain and 36 days with snow. The average barometer value is 992.74 mb. The mean annual cloudiness of the wider area of the city is 5.7% of coverage of the sky with clouds, the highest clouds in the winter and lowest in summer.

Wind frequency is from 81 to 105 days per year. On the average, the wind force is just below 3 on the Beaufort scale (less than 11.9–19.7 km/h). According to the values of annual frequency, wind direction and silence (1991 - 2005) it can be concluded that the highest frequency of occurrence in the city of Nis is silence (S) that are represented with 29.7%. The most common wind direction is northwest (NW) with 11.2%, which is most common in the summer (24.2%) and the lowest in autumn (14.8%), whereas the lowest frequency of occurrence is of the southeastern wind (SE) with 1.5 %. The highest average wind speed is from the northwest direction NW (3.1m / sec) and the lowest from south (S) and west-southwest direction (W) (1.4 and 1.5 m / sec).

Table 5 - Climate metrics for the City of Nis area

TEMPERATURE	
Average air temperature – January (ºC)	0.4
Average air temperature – July (ºC)	22.8
Average air temperature – annual (ºC)	12.8
Mean number of frost days – per year	84
Mean number of tropical days – per year	50
HUMIDITY	
Average relative humidity – annual (%)	70.4
SUNSHINE DURATION	
Average number of clear days – per year	72
Average number of cloudy days – per year	107
PRECIPITATION	
Average precipitation quantity – per year (mm)	579.8
METEOROLOGICAL PHENOMENA	
Average number of days with snow – per year	36
Average number of days with snow cover – per year	41
Average number of foggy days – per year	11
Average number of days with hail – per year	1

3. **Natural resources,** e.g., nearby forest/protected areas, ground and surface water resources

The area of the City of Nis is characterized by diversity of natural resources such as agricultural land, forests, water and natural rarities and values. Near the location of the drying facility in Donji Matejevac, there are no registered and specially protected natural resources. All protected areas of natural resources in the City of Niš are at a distance of over 10 km of the considered location of the drying facility. Here are the most important protected areas:

Sicevac Gorge (Sićevačka klisura) is protected by the State Decree on the Protection of Natural Park, and is categorized in the second category as a Natural Park. It is located 15 km east of the City of Niš. Its length is 17 km and in its narrowest place, it is 150 m wide. Its total area is 7,746 ha, of which 5,559 ha are in the area of the City of Niš, in the municipality of Niska Banja. The Gorge presents an area of exceptional biodiversity and habitat of a large number of endemic, endemorelict, relict and rare species of plants and animals. It has 1,138 species of flora and is one of the most significant refugial areas in the country, where 20-40 endemic species are present per unit of 10 km². A large number of caves, caverns, rock shelters, cliffs and other geomorphological forms make the Gorge very interesting.

Jelašnica Gorge (Jelašnička klisura) is protected by the State Decree on the Protection of the Special Nature Reserve and is categorized in the first category of protection as Special Nature Reserve. The area of the special reserve is located in the municipality of Niska Banja and covers 115.72 ha, of which 20.49 ha are privately owned. It is 1,500 meters long, and its maximal width is 30 meters. The river Studena, more recently known as the river Jelašnica, cuts this lively gorge into the slopes of the Suva Planina mountain. In the narrowest part of the gorge is the Ripaljka waterfall which is the mouth of the only tributary of the aforementioned Studena river. The special significance of the Jelašnica Gorge lies in the rare and endangered plant and animal species. 65 plant species in the gorge are endemic and there are present over 40 animal species, of which 19 are endangered species in Europe and in Serbia.

On part of the territory of the City of Niš, in the municipality of Niška Banja, is the Special Nature Reserve ***Suva Planina*** placed under protection by the State decision on Preliminary Protection of the Special Nature Reserve. The total area of the special reserve is 1,820 hectares.

Cave of Cerje (Cerjanska pecina) is protected by the State Decree on Protection of the Natural Monument and categorized in the second category as a Natural Monument. It is located in the area of the Niš municipality, on cadaster municipalities Cerje and Kravlje, with a total area of 63.96 ha of which 60.44 ha are privately owned, and 3.52 ha are in public ownership.

Kamenica Heights (Kamenički Vis) is the woodland park protected by the City Decree on Declaration of Woodland in Public Ownership as Special Purpose Woodlands. The woodland park is located on the northern slopes of the Tourist-recreational complex „Kamenica Heights“, in the municipality of Pantelej. Park area is largely under the high beech trees.

Other localities of greater biodiversity significance are: **Lalinac Salt Marsh (Lalinačka Slatina), Miljkovac Gorge and Sredko's Gorge** and **ten trees protected as natural monuments.** Natural Park "Sicevac Gorge", Special Nature Reserves "Jelasnica Gorge" and "Suva Planina" are registered in the lists of international programs such are, Important Bird and Biodiversity Area (IBA), Important Plant Areas (IPA), and Prime Butterfly Areas (PBA). Natural Park "Sicevac Gorge" and Special Nature Reserve "Suva Planina" are also included in the EMERALD network, as part of the European ecological network for the conservation of wild flora and fauna and their habitats. The watercourse and coastal band of South Morava River was enrolled in the List of ecological corridors of international importance.

Surface water resources - hydrographic network of surface flows is significantly developed. The area is characterized by a large number of brooks, small rivers and streams with continuous and intermittent river flows. Distinguished are two major streams: The South Morava and Nisava. The South Morava has the characteristics of a typical lowland river with numerous meanders and sandbanks, relatively poor in water level. It runs its

natural river bed of the length of around 21,780 m in the administrative area of the City of Nis. The river Nisava in its lower course flows through the City of Nis in the length of 39,795 m. In this area, the Nisava receives from the right the Malcanska, Trebinjska, Matejevacka, and Rujnicka rivers, and on the left the Ostrovicka, Studena, Jelasnicka, Kutina, and Gabrovacka rivers. The Nisava belongs to II / III real class quality of watercourses.

Ground Water Resources - Based on hydrogeological image of the terrain, the following are the areas of groundwater: complexes of Miocene deposits and local areas with fracture type within the Paleozoic aquifers. These are rock complexes in with the most significant runoff, then areas with karst-fracture type of aquifers, and the wider zone of alluvial plains along the South Morava and Nisava along with narrow bank strip along its tributaries. Other areas, with potential groundwater, represent areas with narrow local character. Total number of springs in Nis has not been determined. Of the greatest significance for the water supply of the area are the Studensko Vrelo springs. It results from the 12 strong wells that were collected from three springs and tapped for low water supply.

4. Current land use

At the City of Nis territory there are four basic categories of land use that can be classified as: agricultural, forest, water and construction land.

Agricultural land covers 62% of the total area of Nis, or 0.15 hectares per capita. Nis has 80% of arable and 20% of non-arable agricultural land. In the structure of the arable land the majority is made up of plough-land and gardens (58.73%), pastures (20.30%), orchards and vineyards (15.98%), vegetable plants (0.44%), and unseeded land (2%). In the plough-land and garden category, 57.8% of the area is taken up by grains. Non-arable agricultural land is dominantly pastures (7,503 ha, 40% private ownership, 60% state owned), while there are seven fish ponds, reeds and marshes in total. The agricultural land is fragmented, and 87.7% of its total area of 36.996 ha is privately owned by small-scale individual farmers. Cultivated land makes approximately 2 ha of an average privately owned farm. Second, third, fourth and fifth class of fertility of a plot of land dominates.

The distribution of agricultural land in the administrative territory of the City shows a concentration of farming land in the western part of town (Palilula Municipality) by the Morava River an in the north-eastern part (Pantelej Municipality) in Vrežina, Malča, Matejevac, Knez Selo, Jasenovik, Vrelo, Pasjači, Oreovac, where it takes up over 70% of the area of the cadastral municipalities. In the central part, outside of the broader city area, farming land takes up an average of 50-70%, while in the northern and eastern parts due to the configuration of the land farming land takes up less than 35% of the total area of the land.

The main comparative advantage of the Niš land fund is diversity according to type, altitude and manners of exploitation, and extremely low pollution levels. The fragmentation of the farms imposes establishing highly profitable forms of agricultural production (vegetables, fruits, tobacco, cattle farming and all forms of organic production). The diversity of the Niš land fund provides quality prerequisites for the development of absolutely all forms of agricultural production, primarily directed towards the local market. These advantages, particularly non-contamination of soil, may be used for the shortest and the most efficient conversion from conventional to organic farming.

Agriculture is a very significant segment of a the economic activity as a whole since it participates with 4.65% in realization of total national income of the City of Niš while at the level of the Republic the participation of agriculture in realization of the national income is significantly higher and it is 17.27%.

Forest land - It is estimated that there are total of 111,899 ha under forests in the wider area of the City

of Nis of which 53.636 ha are private forests. State forest land extends on 58.262 ha and is managed by Forest Management Nis, which is part of the national public company for forest management "Srbijašume". Over 30% of the state forest is thickets and shrubs and 21.6% on sprout forests, both of low quality, 9% of artificially established forests, and 17% of high forests. The bad situation is in private forests. The inner city area of Nis is moderately covered by forests. There is 14.480ha of state owned and private 6.674 ha (a total of 20,854 ha). The majority of the area under forests is in the territory of the Niška Banja and Crveni Krst Municipalities; a smaller part of the forest land can be found in the Pantelej and Palilula Municipalities, while the Meridijana Municipality has no areas under forests, and no farming land. Wood volume from the existing forest resources is mainly used as fuel wood for the requirements of the urban and rural population. Small quantities are used in the wood processing industry and for local requirements, after processing in several sawmills in some of the villages.

Watershed land is located in the basin of the rivers Nišava and South Morava.

Construction land, in addition to housing and other content, is characterized by the industrial zones located in the western, northwestern, eastern and southern parts of the city.

Spatial plan of the administrative area of the city of Nis for the period from 2007 to 2021 represents a planning document which defines long-term concept of development, organization, regulation, protection, and use of the administrative area of the City of Nis. The area covered by the plan consists of five city municipalities: Medijana (10.7 km2), Palilula (117.3 km2), Pantelej (141.7 km2), Crveni Krst (181.5 km2) and Niska Banja (145.4 km2).

The area of the General Urban Plan (GUP) of Nis for 2010-2025 covers an area of 266.77 km2, or 26,676.90 acres, representing 44.70% of the total area of the City of Nis (596.78 km2). The area of the GUP Nis covers the entire territory Medijana municipality, parts of the territory and urban municipalities of Crveni Krst, Pantelej, Niska Banja and Palilula. In the area of the GUP Nis, there is a whole cadastral municipality of Donji Matejevac 1 where the future facility for drying is located.

The city area is characterized by balanced network of settlements and population imbalance. On the territory of the city, a network of 71 settlements is formed, which includes the City of Nis, 18 suburbs in the scope of the existing General Plan, and 52 villages in the rural area, with an average population of 3,526 per settlement. The level of urbanization is 71.1%, and the urban-rural structure is 2/3 urban, and 1/3 rural population.

The city of Nis organized city-center to the main city center. The urban area of the city of Nis includes 15.036ha with 11 urban and 7 rural settlements. Population density in urban reaches 500ft / ha, and the average population density in the urban area is 520ST / km2.

5. Proximity to public facilities, e.g. schools, hospitals, etc.

Most facilities of the public institutions are located in the city center which is 7 km away from the location in Donji Matejevac. The nearest public facility is branch of the primary school from neighboring village of Gornji Matejevac, located about 300 meters from the dryer premises.

D. Legal, Regulatory, and Permitting Requirements

1. National environmental impact assessment requirements for this activity

The set of environmental legislation in Serbia comprises more than 100 laws, by-laws and regulations. Legislative, executive and judicial powers are mostly exercised within the legally prescribed scope of competence of the Republic's authorities. According to the law, certain competences are delegated to the local authorities. The "new" legal framework for environmental protection was introduced in Serbia in 2004 by the Law on Environmental Protection; Law on Strategic Environmental Assessment; Law on Environmental Impact Assessment and Law on Integrated Pollution Prevention and Control (Official Journal of Republic of Serbia, No. 135/04).

Significant issues addressed by the Law on Environmental Protection include the management and protection of natural resources, measures and conditions of environmental protection, environmental programs and plans, industrial accidents monitoring and reporting, financing of environmental protection, inspection services and fines. The new laws are harmonized with the EU Directives on Environmental Impact Assessment (85/337/EEC), Strategic Impact Assessment (2001/43/EC), IPPC (96/61/EC) and Public Participation (2003/35/EC). No specific legislation exists in Serbia regarding soil and groundwater contamination and criteria for remediation. There are only Regulations on permitted amounts of hazardous and harmful substances in soil and water for irrigation and methods for their testing. (Official Journal of Republic of Serbia, No. 23/94)

The entire scope of the activity that will be supported by SLDP Project includes procurement and installation of small capacity equipment for the preparation of fresh fruits and vegetables for drying and universal tunnel dryer. Renovation works of the building where the dryer will be installed, and infrastructure works required for the installation of drying equipment, are already provided by the City of Niš.

According to the "Decree on the list of projects for which the environmental impact assessment is mandatory and the list of projects for which the impact assessment may be required (Official Gazette of the Republic of Serbia no 114\2008)" there are no environmental impact assessment requirements for supply and installation of the subject equipment.

The dryer envisaged by the project does not fall under the List 1 "Projects for which the environmental impact assessment is mandatory" such as plants for the production of hot water using all types of fuels with a power of 50 MW capacity or more. The dryer has the installed thermal power of the thermal energy generator / hot water boiler of only 200 KW, which is 250 times less than the minimum required for impact assessment.

Also, the drying plant does not fall under the List 2 "Projects for which the environmental impact assessment may be required "such as installations for the production of hot water using all types of fuels with a power of 1 to 50 MW, plants for the processing or treatment of raw materials of plant origin with a capacity of 30 to 300 tonnes per day, and dryers with a capacity exceeding 200 tonnes per day. The drying plant which is the subject of this project has the maximum capacity of processing/drying up to 3 tonnes of raw material per day.

There is accordingly no need for an environmental impact assessment for the design, procurement and installation of drying equipment under the national legislation of Serbia.

2. Applicable National or local permits for this activity, responsible party, and schedule for obtaining them:

Permit Type	Responsible party	Schedule
Zoning	-	-
Building/Construction	-	-

Source Material Extraction	-	-
Waste Disposal	-	-
Wastewater	-	-
Storm Water Management	-	-
Air Quality	-	-
Water Use	-	-
Historical or Cultural Preservation	-	-
Wetlands or Water bodies	-	-
Threatened or Endangered Species	-	-
Other		-

Procurement, installation and usage of requested equipment does not require any of the above-mentioned permits.
Permits for the work already done on the reconstruction of the building were previously acquired by the authorities of the City of Nis. There are no additional construction works necessary for installation of the equipment.

3. Additional National, European Union, or other international environmental laws, conventions, standards with which the activity might be required to comply
   a. Air emission standards N/A
   b. Water discharge standards N/A
   c. Solid waste disposal or storage regulations N/A
   d. Hazardous waste storage and disposal **N/A**
   e. Historical or cultural preservation **N/A**
   f. Other

E. Engineering Safety and Integrity

1. Will the activity be required to adhere to formal engineering designs/plans? **No**

   The development of specific engineering designs for the procurement and installation of requested drying equipment, which is the subject of this Environmental Review Checklist, **is not required**.

   The activity does not require procurement of specific equipment, tailor-made only for the purposes of this activity, but is looking for the standard drying equipment that can be found on the Serbian market from local manufacturers with many years of experience. Such manufacturers produce standard drying equipment, designed years ago, for which they have already developed engineering plans and obtained necessary permits and approvals required by local laws and regulations.

   However, the terms of reference for the procurement will require from the manufacturer to provide engineering design and installation drawing of the drying equipment with information about dimensions, weight, and connections to electromechanical and water installations and other technological parameters as per the procurement tender.

   The City of Nis has already provided the main technological design of the drying process that will be performed in the service drying center, and for the installation of tunnel dryer along with the equipment layout plan. Technical specification of requested equipment for procurement has been developed by the Project in-house specialist, an agricultural engineer.

2. Have these been or will they be developed by a qualified engineer? **Yes**

   Engineering design for the construction of drying equipment and installation drawing must be provided by qualified mechanical engineer of the selected manufacturer which is a certified design engineer of thermal engineering, thermal energetics, and gas and process techniques. The selected manufacturer of drying equipment must be certified for the production of the thermal energy generators e.g. hot water

boilers. The main technological design of the drying process and installation of tunnel dryer has been already prepared by the certified design engineer of food processing technology, hired by the City of Nis.

3. Do designs/plans effectively and comprehensively address:
   a. Management of storm water runoff and its effects? N/A
   b. Reuse, recycling, and disposal of construction debris and by-products? N/A
   c. Energy efficiency and/or preference for renewable energy sources? **Yes**
      One of the terms of reference for the procurement is that tunnel dryer equipment has to be designed to decrease electrical consumption and use biomass and wood as fuel for the work of the thermal energy generator/ hot water boiler for heating the hot air for drying. Wood and especially biomass are considered as a climate neutral and socially viable sources of renewable energy when come from sustainably managed resources such are biomass residues in agriculture that will be used to fuel planned dryer and wood from privately and publicly owned and managed forests. Wood and biomass are neutral materials from the aspect of carbon dioxide emissions and its impact on the generation of greenhouse gases. Combustion of wood and biomass releases the same amount of carbon dioxide that the tree or plant have absorbed during its growth.
      The planned hot water boiler does not have air pollution control equipment such as cyclone collector to reduce particulate emissions from wood combustion. Planned capacity of hot boiler is not the industrial, and is not subject to environmental legislation of Republic of Serbia. There are no environmental impact assessment requirements for supply and installation of the subject equipment. As previously mentioned these boilers burn relatively small amount of solid fuel and do not release large amounts of ashes. Installation of cyclone collectors or air purifiers is required by law for industrial hot boilers of much higher capacity, as explained on page 21. However, additional installation of the cyclone collector for the planned hot boiler is possible in case of any change of local regulation in the future. Installation of the cyclone collector with the pipeline for the boiler of this capacity costs around 1,200-2,000 USD.

   d. Pollution prevention and cleaner production measures? N/A
   e. Maximum reliance on green building or green land-use approaches? N/A
   f. Emergency response planning? N/A
   g. Mitigation or avoidance of occupational safety and health hazards? **Yes**
      One of the terms of reference for the procurement is that the drying equipment is to have been designed and manufactured in accordance with the legislative of the Republic of Serbia, particularly to the Law on occupational safety and health. Procured equipment must be attested in accordance with national regulations in the respective institutions. The equipment must have the appropriate certificates and permits and technological and technical documentation necessary for the use and maintenance such as: certificate/ confirmation on inspection of pressure vessels for the hot boiler of the dryer, document of conformity with technical equipment requirements issued by the competent body, and factory certificates/quality assurance for the installed material and surface treatment of metal parts. Selected manufacturer of equipment will have to possess certificate for the introduced OHSAS 18001/2008 standard for Management of Occupational Health and Safety Systems and ISO 9001/2008 standard for Quality Management Systems.

      The drying equipment must be operated as per the manufacturer's instructions. Upon delivery, the manufacturer of equipment must provide an instructions manual for safe handling and managing the drying equipment. Based on the manufacturer's manual, DARD will develop internal procedures and protocols to govern the usage and maintenance of the equipment and the drying center. This will include policies for the selected users of the drying center, cost sharing obligations between the users and DARD as a provider of subsidized drying center, principles of joint usage of the equipment, normative schedules for usage of the equipment, responsibilities for utilization of the equipment in compliance with manufacturer's instructions, procedures for delivery and removal of raw materials and dried finished products from the dryer and premises in which the equipment is

housed, checklist for periodic maintenance steps and inspections, and any other protocols or procedures necessary to the optimal and safe usage of the equipment, including reporting on equipment utilization and maintenance.

The manufacturer will deliver training on the safe handling of the equipment to operators of the equipment upon its installation. The equipment should not be modified in any way. Personal protective clothing for drying equipment users and operators will be also provided. The rules for fire protection prevention measures and basic provisions as well as the fire emergency evacuation plan for each of the rooms within the building will be provided by the DARD of the City of Nis as the project holder and owner of service drying center before the start of drying operations. The premises will be equipped with the fire extinguishers according to defined fire protection measures, and fire exits clearly marked according to designed evacuation plan.

h. Environmental management of mobilization and de-mobilization? N/A
i. Capacity of the host country recipient organization to sustain the environmental management aspects of the activity after closure and handover? N/A

4. Are there known geological hazards, e.g., faults, landslides, or unstable soil structure, which could affect the activity? If so, how will the project ensure structural integrity? No

5. Will the site require grading, trenching, or excavation? Will the activity generate borrow pits? If so, how will these be managed during implementation and closure? No

6. Will the activity cause interference with the current drainage systems or conditions? Will it increase the risk of flooding? No

7. Will the activity interfere with above- or below-ground utility transmission lines, e.g., communications, water, sewer, or natural gas? No

8. Will the activity potentially interfere with vehicle or pedestrian traffic? No

9. Does the activity increase the risk of fire, explosion, or hazardous chemical releases? **Maybe**

There is a very low risk of accidental explosion and fire due to improper handling of the dryer's hot water boiler unit during operation of the fruits and vegetables drying, particularly by untrained and/ or careless equipment operators.

As already explained in the section E. "Engineering Safety and Integrity", under the 3g. "Mitigation or avoidance of occupational safety and health hazards" the selected manufacturer of drying equipment will have to provide protocols for proper and safe use of the equipment. Upon the equipment installation, the selected manufacturer must provide training on proper and safe handling of the equipment to the operators of farmers' groups selected to use the drying center, as well to the staff of the Food Processing Support Center of the City of Niš who will supervise and monitor the drying operations. The training will be periodically organized as with the replacement of producer groups as users of the service drying Centre and their technologists and equipment operators. The drying equipment must be operated as per the manufacturer's instructions and should not be modified in any way.

The drying equipment is to have been designed and manufactured in accordance with the legislative of the Republic of Serbia, particularly to the Law on occupational safety and health. Walls of the tunnel of the dryer must be made of insulated polyurethane panels of the appropriate thickness as per tender specification. A hot water boiler for the production of thermal energy for heating the hot air for drying must be of first class boiler-grade steel and located in a physically separate and heat-insulated area of the drying facility. The equipment manufacturer must be certified in OHSAS 18001/2008 standards for Management of Occupational Health and Safety Systems and must be able to obtain all permits, certificates and technical documentation necessary for the safe use and maintenance of the equipment such as: certificate/ confirmation on inspection of pressure vessels for the hot boiler of the dryer and document of conformity with technical equipment requirements issued by the competent body.

The DARD of the City of Nis, as the project holder, has obtained all required permits and approvals for the reconstruction works on the building, including required electrical, water supply, sewage and

chimney installations, and approval with regard to fire prevention measures. Prior to the installation of the equipment, they must develop rules for fire protection prevention measures and the fire emergency evacuation plan for each of the rooms within the building. The premises must be equipped with the fire extinguishers according to defined fire protection measures, and fire exits must be clearly marked according to designed evacuation plan.

10. Does the activity require disposal or retrofitting of polychlorinated biphenyl-containing equipment, e.g., transformers or florescent light ballasts? No

The envisaged equipment is not heavy industrial equipment of high power and high production capacities, and it is suitable for small-scale processing operations of small-scale farmers' fresh produce. All equipment runs on electrical power of standard voltage and frequency which is provided through a public network in Serbia except the hot water boiler which runs on wood and biomass solid fuels for which there are proper installations in the facility. Whenever it is possible, the equipment technical specification should take into account preference for renewable energy sources and energy efficiency.

F. Environment, Health, and Safety Consequences

1. Potential impacts to public health and well-being

a. Will the activity require temporary or permanent property land taking? No

b. Will activities require temporary or permanent human resettlement? No

c. Will area residents and/or workers be exposed to pesticides, fertilizer, or other toxic substances, e.g., as a result of farming or manufacturing? No
If so, how will the project:
   i. Ensure that these chemicals do not contaminate ground or surface water? N/a
   ii. Ensure that workers use protective clothing and equipment to prevent exposure? N/a
   iii. Control releases of these substances to air, water, and land? N/a
   iv. Restrict access to the site to reduce the potential for human exposure? N/a

Although area residents and equipment operators will not be exposed to any toxic substances as a result of drying operations, there will be some preventive measures applied. Preventive measurements of emissions of air pollutants from the facility will be conducted annually to check whether the levels are in accordance with the provisions of the Law on air protection and the Decree on limit values of pollutants in the air. Also, preventive controls of waste water will be conducted by the Institute for Public Health in Nis. The operators will receive the vendor-certificated training on the safe handling and use of the equipment and the protocols and procedures to properly and safely operate the equipment will be developed and enforced. Drying equipment operators will wear working coats, disposable caps, gloves and masks, but not because their safety is threatened, but because of the application of usual food safety procedures for this type of food processing operations. Personal protective clothing will be used during the operations of adding fuel to the boiler to fired it up and maintaine the working temperature, in order to protect workers during the wood and biomass handling and of high temperatures in the boiler firebox.

d. Will the activity generate pesticide, chemical, or industrial wastes? Could these wastes potentially contaminate soil, groundwater or surface water? No

e. Will chemical containers be stored at the site? No

f. Does the activity remove asbestos-containing materials or use of building materials that may contain asbestos, formaldehyde, or other toxic materials? Can the project certify that building materials are non-toxic? If so, how will these wastes be disposed of? No

g. Will the activity generate other solid or hazardous wastes such as construction debris, dry or wet cell batteries, florescent tubes, aerosol cans, paint, solvents, etc.? If so, how will this waste be disposed of? No

h. Will the activity generate nontoxic, nonhazardous solid wastes (subsequently requiring land resources for disposal)? No

Only damaged fruit and vegetables, separated during the inspection of raw materials, which is not suitable for drying may appear as solid waste material in minimal quantities that does not require special waste disposal measures. Baring in mind that drying of fruits and vegetables is seasonal operation that will not take place throughout the whole year, but only during the peak harvest seasons, the estimated maximum amount of raw material that will be dried per season is up to 200 tons. However, this amount may not be reached in the first few years of operations. In later seasons, this amount may even increase with introduction of cold chambers and use of previously deep frozen fruits and vegetables, as raw material stored for drying during the off season period. Since this may also increase the cost of production, it will not be the prevailing method of keeping the raw material for drying. It is estimated that during the drying operations, maximally up to 10% of inadequate fruit (damaged or spoiled) will occur. The organic waste will be disposed as communal waste in accordance with the local law, or used for composting and production of organic fertilizers.

i. Will the activity pose the need to handle and dispose of medical wastes? If so, describe measures of ensuring occupational and public health and safety, both onsite and offsite. No

j. Does the activity provide a new source of drinking water for a community? If so, how will the project monitor water quality in accordance with health standards? No

k. Will the activity potentially disturb soil contaminated with toxic or hazardous materials? No

l. Will activities, e.g., construction, refurbishment, demolition, or blasting, result in increased noise or light pollution, which could adversely affect the natural or human environment? No

2. Atmospheric and air quality impacts

a. Will the activity result in increased emission of air pollutants from a vent or as fugitive releases, e.g., soot, sulfur dioxide, oxides of nitrogen, volatile organic compounds, methane. **No**

Emission of air pollutants from the dryer's chimney as the stationary source of pollution is minimal and below the prescribed emission limits values allowed by Serbian environmental legislation. The dryer's hot water boiler will have small capacity of installed thermal power of 200 kilowatts (kW) which is close to the capacities of hot water boilers used in households for heating homes. As already explained in the section D. "Legal, Regulatory, and Permitting Requirements", under the "1. National environmental impact assessment requirements for this activity", planned hot boiler thermal power of 200 kW is 250 times less than the minimum required for environmental impact assessment. The smoke that will be produced by burning the biomass and wood does not contain any sulfur dioxide, and the amounts of nitrogen dioxide are very small and far below the limits of acceptability. By burning of biomass there are no emissions of hydrocarbons, as incomplete products of combustion. Wood and biomass are the cleanest and safest fuels that exist today, especially in relation to solid fossil fuels and petroleum products, and are the fuels with very low nitrogen and almost none sulfur content.

Carbon dioxide (CO2) emissions during the combustion of wood and other fuels in kilogram per kilowatt-hour of energy produced:

Fuel	CO2 emissions in kg/kWh
Coal	0,38
Crude oil fuel (masut)	0,27

Bottled gas	0,23
Gas	0,19
Wood and biomass	0,02 - 0,03

As other biofuels, biomass meets the criterion of a closed system in terms of the production of carbon dioxide and solid material combustion products. Wood and biomass are neutral materials from the aspect of carbon dioxide emissions and its impact on the generation of greenhouse gases. Combustion of wood and biomass releases the same amount of carbon dioxide that the tree or plant have absorbed during its growth.

However, once a year during the drying season the DARD of the City of Nis will conduct preventive measurements of emissions of air pollutants from the facility to check whether the levels of carbon oxides, sulfur dioxide, nitrogen oxides, total powdery substances and organic compounds expressed as total carbon, in accordance with the provisions of the Law on air protection and the Decree on limit values of pollutants in the air. Preventive measurements will be carried out by the local accredited laboratory for measurement of the emission of harmful and hazardous substances in the air from the stationary sources.

b. Will the activity involve burning of wood or biomass? **Yes**
As a fuel for the hot boiler for the production of thermal energy for heating the air for drying, the dryer will mainly use the biomass residues in agriculture and occasionally firewood that can be obtained at the local wood fuel market. In agricultural production in Serbia huge amounts of biomass, i. e., organic matter, residues from the production and waste mass are produced each year. It is estimated that out of the total amount of biomass, some 30-40% can be used for the production of heat energy, electricity and biofuel. Amounts of biomass that could be obtained by pruning orchards and vineyards per year is approximately 3.20 t/ha. Having in mind that the users of the drying Center will be local farmers' groups, supply of cut off biomass from pruned branches in the orchards and vineyards would not be a problem and will decrease the drying costs and usage of firewood. Burning of biomass gives the so-called pure ashes as a solid combustion residue. Atmospheric and air quality impacts of the use of wood and biomass as hot boiler fuel are already explained in the previous 2.a. section.

c. Will the activity install, operate, maintain, or decommission systems containing ozone depleting substances, e.g., freon or other refrigerants? No

d. Will the activity generate an increase in carbon emissions? **Maybe**
Explained in the previous 2.a. section on page 26.

e. Will the activity increase odor and/or noise? No

3. Water quality changes and impacts

a. How far is the site located from the nearest river, stream, or lake?
The site is located about **150 m** from the nearest Matejevacka River which is a streamlet and tributary of the river Nisava and is categorized as the watercourse of the second order.
The site is located 200 m far from the nearest river Veternica that has built river bank defense system and regulated river flow.

b. Will the activity disturb wetland, lacustrine, or riparian areas? No

c. What is the depth to groundwater at the site? N/A

d. Will the activity result in increased ground or surface water extraction? If so, what are the volumes? Permit requirements? No

e. Will the activity discharge domestic or industrial sewage to surface, ground water, or publicly-owned treatment facility? **Yes**
Planned service drying center will have small-scale operations and the small amount of nonhazardous wastewater will be discharged during the drying season into public sewerage system. The estimated amount of water that will be used per season is based on the estimated amount of raw material that

will be dried per season and planned capacity of the machine for washing of fresh material for drying. The estimated amount of raw material that will be dried per season is maximum 200 tons. Estimated capacity of the washing machine is around 500 kg/h, which requires up to 1.5 m3 of water per hour, or maximum of 9 m3 of water per day. Therefore, the estimated amount of water to be used and disposed per season will vary between 400 to 800 m3. In addition, very small amount of water will be also used for personal hygiene of equipment operators, and periodical washing of equipment. In the production process, waste water that goes down the drain is not toxic and it is mainly water used for washing fresh fruits and vegetables before drying. Also it is water and hygiene items used for maintaining the personal hygiene of the equipment operators and food handlers and rarely for washing and disinfecting equipment parts such are metal racks on which raw material for drying are placed in the tunnel dryer. The only chemicals that will be used are hygiene items for washing and disinfecting equipment parts, cleaning and disinfecting the work surfaces without rinsing, and for maintaining the personal hygiene of the equipment operators and food handlers. No hazardous chemicals, these are regular cleansers/ detergents used for the removal of fruit and vegetables remains from metal parts of the equipment, that comes in contact with food during drying operations. Since this is a cleaning of residues of plant origin and not residues of animal origin, the cleaning process is easy and cleaning materials are not hazardous.

According to local regulations and analytical results of water analysis, business activity that will be performed in the service drying Center is not recognized as a polluter and producer of hazardous waste water, and therefore, is not subject to specific environmental protection measures. However, the content of waste water must be in accordance with the provisions of the law on environmental protection and therefore periodic preventive controls will be carried out by the Institute for Public Health in Nis.

The City of Nis does not have a completely constructed sewer network, main waste water collector, and municipal wastewater treatment plant. Works on the construction of the sewer collector network are underway, and after its completion, construction of the main collector and the water treatment plant will commence. Donji Matejevac has built a secondary sewerage network that flows into the "Sombor" waste water collector from where the accumulated wastewater is further discharged in the Nisava River.

f. Does the activity result in increased volumes of storm water run-off and/or is there potential for discharges of potentially contaminated (including suspended solids) storm water? No
g. Will the activity result in the runoff of pesticides, fertilizers, or toxic chemicals into surface water or groundwater? No
h. Will the activity result in discharge of livestock wastes such as manure or blood into surface water? No
i. Does the site require excavation, placing of fill, or substrate removal (e.g., gravel) from a river, stream or lake? No

4. Land use changes and impacts

a. Will the activity convert fallow land to agricultural land? No
b. Will the activity convert forest land to agricultural land? No
c. Will the activity convert agricultural land to commercial, industrial, or residential uses? No
d. Will the activity require onsite storage of liquid fuels or hazardous materials in bulk quantities? No
e. Will the activity result in natural resource extraction, e.g., granite, limestone, coal, lignite, oil, or gas? No
f. Will the activity alter the view shed of area residents or others? No

5. Impacts to forestry, biodiversity, protected areas and endangered species

a. Is the site located adjacent to a protected area, national park, nature preserve, or wildlife refuge? No
b. Is the site located in or near threatened or endangered (T&E) species habitat? Is there a plan for identifying T&E species during activity implementation? If T&E species are identified during

implementation, is there a formal process for halting work, avoiding impacts, and notifying authorities? No

c. Is the site located in a migratory bird flight or other animal migratory pathway? No
d. Will the activity involve harvesting of non-timber forest products, e.g., mushrooms, medicinal and aromatic plants (MAPs), herbs, or woody debris? No
e. Will the activity involve tree removal or logging? If so, please describe. No

6. **Historic or cultural resources**
   a. Are there cultural or historic sites located at or near the site? If so, what is the distance from these? What is the plan for avoiding disturbance or notifying authorities? **Yes**
   Small church dedicated to St. Archangel Michael is located 100m from the facility. The church was declared a cultural heritage monument in 1983, according to the decision of the Executive Council of the Municipality of Nis. The planned activities will not cause any disturbance to the church and its visitors. The authorities are notified since the City is the owner and investor of this building and has all the necessary permits and approvals.
   b. Are there unique ethnic or traditional cultures or values present in the site? If so, what is the applicable preservation plan? No

Further Analysis of Recommended Actions.

☐ **1. Categorical Exclusion:** The activity is not likely to have an effect on the natural or physical environment. No further environmental review is required.*

☒ **2. Negative Determination with Conditions:** The activity does not have potentially significant adverse environmental, health, or safety effects, but may contribute to minor impacts that can be eliminated or adequately minimized by appropriate mitigation measures. EMMPs shall be developed, approved by the Mission Environmental Officer (MEO) (and the BEO if required by the IEE) prior to beginning the activity, incorporated into workplans, and then implemented. See Sections H and I below.*

☐ **3. Positive Determination:** The activity has potentially significant adverse environmental effects and requires further analysis of alternatives, solicitation of stakeholder input, and incorporation of environmental considerations into activity design. A Scoping Statement must be prepared and be submitted to the BEO for approval. Following BEO approval an Environmental Assessment (EA) will be conducted. The activity may not be implemented until the BEO clears the final EA. For activities related to the procurement, use, or training related to pesticides, a PERUSAP will be prepared for BEO approval.

☐ **4. Activity Cancellation:** The activity poses significant and unmitigable adverse environmental effects. Adequate EMMPs cannot be developed to eliminate these effects and alternatives are not feasible. The project is not recommended for funding.

Note regarding applicability related to Pesticides (**216.2(e): The exemptions of §216.2(b)(l) and the categorical exclusions of §216.2(c)(2) ***such as technical assistance, education, and training are not applicable to assistance for the procurement or use of pesticides.

G. EMMPs

1. Activity-specific environmental mitigation plan (Upon request, the MEO may be able to provide your project with example EMMPs that are specific to your activity.)

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
Procurement and use of equipment	E. Engineering Safety and Integrity	*E.1. Will the activity be required to adhere to formal engineering designs/plans? YES* *There is no foreseen significant adverse impact. No further environmental review required. Non-the-less, certain mitigation measures may be applied.* The development of specific engineering designs for the procurement and installation of requested drying equipment, which is the subject of this Environmental Review Checklist, is not required. This activity does not foresee procurement of specific, tailor-made equipment, but is looking for the standard drying equipment that can be found on the Serbian market from local manufacturers with many years of experience. Such manufacturers already have developed engineering plans and obtained necessary permits and approvals required by local laws for the manufacture and sale of this type of drying equipment. Therefore, the terms of reference for the procurement will require from the manufacturer to provide engineering design and installation drawing of the drying equipment with information about dimensions, weight, and connections to electromechanical and water installations and other technological parameters as per the procurement tender. The City of Nis has already provided the main technological design of the drying process that will be performed in the service drying center, and for the installation of tunnel dryer along with the equipment layout plan. Technical specification of requested equipment for procurement has been developed by the Project in-house specialist, an agricultural engineer.	Use developed technological design of the planned drying processes and installation of tunnel dryer. Use developed technical specification of the equipment for procurement process. Include in the terms of reference for the procurement, a requirement that bidders must provide engineering design and installation drawing of offered drying equipment.	Verification of: • technological design of the planned drying processes and installation of tunnel dryer • technical specification of the equipment • terms of reference for the procurement • submitted engineering design and installation drawing by the winning vendor
		E.2. Have these been or will they be developed by a qualified engineer? YES *There is no foreseen significant adverse impact. No further*	Engineering design for the construction of drying equipment and installation drawing must be	Submitted evidence from the winning vendor at the tender

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
		environmental review required. Non-the-less, certain mitigation measures may be applied.	provided by qualified mechanical engineer of the selected manufacturer which is a certified design engineer of thermal engineering, thermal energetics, and gas and process techniques. Developed technological design of the planned drying processes and installation of tunnel dryer has been prepared by the certified design engineer of food processing technology.	for the proposed engineer/s (CV, employment proof, engineering license) Technological design of the planned drying processes and installation of tunnel dryer
	Preference for renewable energy sources and energy efficiency	*E.3.c. Do designs/plans effectively and comprehensively addresses: Energy efficiency and/or preference for renewable energy sources? YES* *There is no foreseen significant adverse impact. No further environmental review required. Non-the-less, certain mitigation measures may be applied.* In contrast to fossil fuels such are coal, oil and gas, biomass and wood are considered as a climate neutral and socially viable sources of renewable energy when arise from sustainably managed resources such are biomass residues in agriculture that will be used to fuel planned dryer and wood from privately and publicly owned and managed forests. Wood and biomass are neutral materials from the aspect of carbon dioxide emissions and its impact on the generation of greenhouse gases. Combustion of wood and biomass releases the same amount of carbon dioxide that the tree or plant have absorbed during its growth.	Whenever it is possible, the equipment technical specification should take into account preference for renewable energy sources and energy efficiency. Include in the terms of reference for the procurement a requirement that tunnel dryer equipment has to be designed to decrease electrical consumption and instead of electricity and fossil fuels (gas, coal, oil) uses biomass and waste wood as fuel for the work of the hot water boiler for heating the hot air for drying.	Verification of technical specification of the equipment
	Occupational safety	*E.3.g. Do designs/plans effectively and comprehensively addresses: Mitigation or avoidance of occupational safety and health hazards? YES* *The foreseen adverse impact is less than significant. Certain mitigation measures are required.*	The equipment must be attested in accordance with local regulations and appropriate certificates provided by the manufacturer: certificate on inspection of	Attests and certificates obtained Verification of manufacturer's certificates of

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
		Procured equipment must be designed and manufactured in accordance with the legislative of the Republic of Serbia, particularly to the Law on occupational safety and health. *E.9. Increase in risk of fire, explosion, or hazardous chemical releases/MAYBE* *The foreseen adverse impact is less than significant. Certain mitigation measures are required.* There is a very low risk of accidental explosion and fire due to improper handling of the dryer's hot water boiler unit during operation of the fruits and vegetables drying, particularly by untrained and/ or careless equipment operators.	pressure vessels for the hot boiler of the dryer, document of conformity with technical equipment requirements issued by the competent body, and quality assurance for the installed material and surface treatment of metal parts. The manufacturer has to possess certificate for the introduced OHSAS 18001/2008 standard for Management of Occupational Health and Safety Systems and ISO 9001/2008 standard for Quality Management Systems. The selected manufacturer must be certified for the production of the hot water boilers. The drying equipment must be operated as per the manufacturer's instructions and should not be modified in any way. Do not operate the equipment unless the operators have received the vendor-certificated training on the safe handling and use of the equipment. Protocols and procedures to properly and safely operate the equipment must be developed and enforced. Develop and enforce rules for fire protection prevention measures and the fire emergency evacuation plan for the drying facility.	required standards Developed procedures and protocols on safe handling and use of equipment. Memo reflecting the completion of initial training on safe handling and use of equipment by manufacturer and topics covered Developed rules for fire protection prevention measures and the fire emergency evacuation plan Portable fire extinguishers, personal protective clothing, and first aid kit provided. Fire exits marked. Site inspection of equipped facility

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
			Provide fire extinguishers and clearly mark fire exits. Provide personal protective clothing for operators and enforce their use. Provide first aid kit. Apply sustainable procurement principles in equipment purchasing and try to use equipment suppliers that will take back end of life products.	
	Atmospheric and air quality impacts	*F.2.a. Will the activity result in increased emission of air pollutants from a vent or as fugitive releases, e.g., soot, sulfur dioxide, oxides of nitrogen, volatile organic compounds, methane. NO* *F.2.d. Will the activity generate an increase in carbon emissions? MAYBE* *There is no foreseen significant adverse impact. No further environmental review required. Does not pose the risk due to low capacity of the hot water boiler and insignificant emission of air pollutants below the prescribed limit values allowed by Serbian environmental legislation.* The dryer's hot water boiler will have small capacity of installed thermal power of 200 kW which is close to the capacities of hot water boilers used in households for heating homes and 250 times less than the minimum required for environmental impact assessment. Wood and biomass are the cleanest and safest fuels today, especially in relation to solid fossil fuels and petroleum products. The smoke produced by burning the biomass and wood do not contains any sulfur dioxide, and the amounts of nitrogen dioxide are almost none and far below the limits of acceptability.	Conduct periodical preventive measurements of emissions of air pollutants from the facility to check whether the levels are in accordance with the provisions of the Law on air protection and the Decree on limit values of pollutants in the air. Preventive measurements should be carried out by the local accredited laboratory for measurement of the emission of harmful and hazardous substances in the air from the stationary sources.	Verification of technical specification of the equipment Record on results of measurements of emissions of air pollutants
		Will the activity involve burning of wood or biomass? YES	Use sustainably managed resources such are biomass	Record on usage of biomass and wood,

Processes	Identified Environmental Impacts	Do the Impacts Require Further Consideration?	Mitigation Measures	Monitoring Indicators
		There is no foreseen significant adverse impact. No further environmental review required. Certain mitigation measures may be required.	residues in agriculture and wood from privately and publicly owned and managed forests.	receipts, invoices, contracts.
	Water quality changes and impacts	*Will the activity discharge domestic or industrial sewage to surface, ground water, or publicly-owned treatment facility? YES* *There is no foreseen significant adverse impact. No further environmental review required.* According to local regulations and results of water analysis, seasonal small-scale business activity that will be performed in the service drying Center is not recognized as a polluter and producer of hazardous waste water, and therefore, is not subject to specific environmental protection measures.	Conduct periodical preventive controls of waste water with the Institute for Public Health in Nis.	Record on results of waste water analysis
	Historic or cultural resources	*Are there cultural or historic sites located at or near the site? If so, what is the distance from these? What is the plan for avoiding disturbance or notifying authorities? YES* *There is no foreseen significant adverse impact. No further environmental review required. Certain mitigation measures may be required.* Small church dedicated to St. Archangel Michael is located 100m from the facility. The planned seasonal and small-scale activities will not cause any disturbance to the church and its visitors. The authorities are notified about this activity and the project design has been coordinated with responsible public institutions. The City is the owner and investor of this building and has all the necessary permits and approvals.	To avoid possible disturbance, provide plan of the work of the drying facility during the campaign of fruits and vegetables drying, scheme of the access to the dryer and receipt of raw materials and dispatch of semi-finished products, in the way in which routes do not overlap with the activities of a nearby church.	Verification of the plan of the work of the drying facility and access routes.

2. Activity-specific monitoring plan

Monitoring Indicators	Monitoring and Reporting Frequency	Responsible Parties	Records Generated
Audit of the technological design of the planned drying processes and the	At the beginning of the project, before the procurement process.	SLDP; Department of Agriculture and Rural	Final technological design and equipment technical specification

Monitoring Indicators	Monitoring and Reporting Frequency	Responsible Parties	Records Generated
technical specification of the equipment		Development of the City of Nis (DARD)	
Audit of the terms of reference for the procurement	At the beginning of the project, before the procurement process.	SLDP	Final terms of reference for the procurement. Published request for proposals.
Audit of the submitted engineering design, installation drawing, standard certificates, and proposed engineers by the winning vendor.	At the procurement process, equipment bid evaluation.	SLDP, Manufacturer, DARD	Bid evaluation report.
Audit of equipment attests and certificates	Upon procurement and at the supply of the equipment.	SLDP, Manufacturer, DARD	Equipment attests and certificates and other technical documentation for the use and maintenance of the supplied equipment required by the local legislative.
Developed equipment instructions manual and the procedures/protocols on safe handling and use of equipment	Upon the supply, manufacturer of equipment will provide instructions manual for safe handling and managing the drying equipment. Based on manufacturer's manual, the DARD will develop internal procedures and protocols governing the usage and maintenance of the equipment and drying center, including maintenance checklist for periodic inspections.	SLDP, Manufacturer, DARD	Instructions manual. Procedures and protocol. Annual report on maintenance checklist generated by unit in charge of the drying equipment.
Training on safe handling and use of equipment completed	Upon the supply of the equipment. Training provided to the operators of farmers' groups selected to use the drying center, as well to the staff of the Food Processing Support Center of the City of Niš who will supervise and monitor the drying operations. The training will be periodically organized for new users as with the replacement of producer groups as users of the service drying Center.	SLDP, Manufacturer, DARD	Memo reflecting initial training by manufacturer and topics covered. Records on training completion Training photos and sign-off sheets. Schedule for re-training of operators.
Developed rules for fire protection prevention measures and the fire emergency evacuation plan	Upon the supply of the equipment, before the start of operations	DARD, SLDP	Rules for fire protection prevention measures. Fire emergency evacuation plan.

Monitoring Indicators	Monitoring and Reporting Frequency	Responsible Parties	Records Generated
Fire exits marked	Upon the supply of the equipment, before the start of operations	DARD, SLDP	Site inspection of equipped facility. Site photos
Portable fire extinguishers, personal protective clothing, and first aid kit provided and enforced their use.	Upon the supply of the equipment, before the start of operations	DARD, SLDP	Site inspection of equipped facility. Site photos.
Measurements of emissions of air pollutants from the facility	Periodic preventive measurements of emissions of air pollutants conducted once a year during the drying season.	DARD, Local accredited laboratory for measurement of the emission of harmful and hazardous substances in the air from the stationary sources	Record on results of measurements of emissions of air pollutants
Traceability of origin of biomass and wood that is used as fuel for the hot boiler unit	Once a year, during the drying season.	DARD, selected user producer groups	Records on usage of biomass and wood, receipts, invoices, contracts
Analytical controls of wastewater deriving from the drying facility	Periodic preventive controls of waste water conducted once a year during the drying season.	DARD, Institute for Public Health in Nis	Record on wastewater test results. Listing of wastewater discharges
Plan of the work of the drying facility with access and exit routes to avoid possible disturbance of activities of a nearby church	Upon the supply of the equipment, before the start of operations. Provide the scheme of the access and exit to the dryer for receipt of raw materials and dispatch of semi-finished products, in the way in which routes do not overlap with the activities of a nearby church.	DARD	Plan of the work of the drying facility with access and exit routes
Equipment disposal	After a life-time of procured equipment in accordance with Serbian standards of disposing of this type of equipment.	DARD	Equipment handover record

I. Certification of No Adverse or Significant Effects on the Environment

The undersigned certifies that all foreseeable significant adverse effects on the environment have been adequately and effectively eliminated or mitigated by the attached Environmental Mitigation and Monitoring Plans (EMMPs) to be implemented at DCN-SER-022. If new adverse effects or the need for new or improved mitigation measures are identified, I will immediately notify the USAID activity manager/COR/AOR.

August 24, 2015

Implementer Project Acting Director/COP
Ana Martinovic

Date

J. Approvals:

Contracting Officer Representative. Sinisa Cadjo

11/02/2015
Date

Mission Environmental Officer, Ivan Vukojevic

11/02/2015
Date

Bureau Environmental Officer, Mark Kamiya

11/02/2015
Date