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ROADMAP FOR CLEAN AIR IN THE REPUBLIC OF SRPSKA: URGENT AND STRATEGIC MEASURES

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This document presents a clear, two-phase plan to address the air pollution crisis in the Republic of Srpska. Phase I is designed to deliver rapid and visible results in the short term, while Phase II establishes the foundations for long-term, systemic solutions.

PHASE I: URGENT INTERVENTIONS (Timeframe: immediate - 12 months)

Objective: Protection of the most vulnerable categories, establishment of control over vehicles and reduction of acute pollution.

1. **Ban on coal usage in households -** Immediate sale, distribution and usage prohibition of coal in urban areas.
2. **Protection of children (air purifiers) -** Procurement of air purifiers for schools and kindergartens through a simple and transparent donation mechanism.
3. **"Clean Air Protocol" for schools** - Clear rules governing children's outdoor activities based on pollution levels.
4. **Ending tampering with vehicles** - Prohibition of removal of DPF filters, EGR valves, and AdBlue systems.
5. **Mobile eco-teams** - On-road emission checks and sanctions for vehicle inspection stations that approve non-compliant vehicles.
6. **Emergency traffic measures** - Free public transport on days with extreme air pollution.
7. **Construction site hygiene** - Mandatory washing of truck wheels before entering public roads.

PHASE II: STRATEGIC TRANSITION (1-3 years)

Objective: Energy transition, economic incentives, and permanent reduction of toxic emissions.

1. **Public Energy Efficiency Fund (PEEF)** – Large-scale subsidies for heat pumps, insulation and building retrofits.
2. **Energy Performance Certificates (EPC) and "Green Tariff Block" -** Lower electricity prices for energy-efficient households.
3. **Removal of custom duties on green technologies** – Zero custom rates for heat pumps, solar systems, and electric vehicles.
4. **Dedicated eco-tax -** Taxation of the most polluting technologies under the "polluter pays" principle, with revenues directed into the PEEF
5. **Mandatory installation of heat meters** – Transition to heating bills based on actual consumption.
6. **Replacement of outdated stoves** – Incentives for modern, cleaner, and more efficient stoves and filters in individual households.
7. **Revitalisation of public transport** – Quality improvements and strong incentives to increase public transport usage.
8. **Centralised preparation of firewood** – Sale of properly dried firewood instead of raw wood.
9. **Strict ban on open waste burning** – Enforcement against burning tyres and plastics.
10. **National air quality monitoring network** – Public, transparent, real-time air quality data.
11. **Stricter industrial standards and PRTR register** – Full oversight of industrial emissions.
12. **Increasing import Euro standards for vehicles** – Stop wild import from EU

CONTEXT: INVISIBLE ENEMIES – PM2.5, NOx AND SO_2

Air pollution in the Republic of Srpska originates from several distinct sources and therefore requires differentiated policy responses. Although commonly referred to as "smog," PM2.5 particles, nitrogen oxides, and sulphur dioxide have specific sources and well-documented, severe health impacts.

1. PM2.5 (Fine particulate matter)

- **What are they?** These microscopic particles penetrate deep into the lungs and bloodstream (30 times smaller than a hair).
- **Sources in Bosnia and Herzegovina:** Combustion of coal and wood in households and industry.
- **Influence on child development:** World Health Organization confirms that PM2.5 damages not only the lungs but also brain development. Proven consequences include:
    - Neurological damage: Reduced cognitive development and lower IQ in children exposed to air pollution
    - Behavioral disorders: Increased risk of developing ADHD (attention-deficit/hyperactivity disorder) and autism spectrum disorders.
    - Physical development: Impaired lung growth, leaving children with permanently reduced respiratory capacity.
    - Overall impact: Fine particles penetrate directly into the bloodstream, increasing the risk of heart attacks, strokes, and lung cancer in adults.
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2. NOx – Nitrogen oxides

- **What are they**? Toxic gases produced during high-temperature combustion
- **Sources in Bosnia and Herzegovina:** primarily from diesel vehicles (especially the ones with removed catalizers, DPF filters and EGR vents) and coal-fired power plants.
- **Health impacts:** NOx is a "silent killer" in urban environments. The European Environment Agency (EEA) attributes tens of thousands of premature deaths each year in Europe to nitrogen oxides.
    - **Mortality:** Long-term exposure has been proven to increase the risk of death from stroke and ischaemic heart disease, as well as to cause respiratory illnesses.
    - **Carcinogenicity:** NOx is a component of diesel exhaust, which the World Health Organization (WHO) has classified as a Group 1 carcinogen (proven to cause cancer in

humans).

- **Systemic inflammation:** It reduces lung function and triggers systemic inflammatory processes in the body, leading to diabetes and hypertension.

3. SO_2 (Sulphur Dioxide)

- **What is it?** A toxic, colourless gas with a sharp, pungent odour, produced by the combustion of sulphur-rich fossil fuels.
- **Sources in Bosnia and Herzegovina**: Coal-fired power plants (lacking flue-gas desulphurisation systems) and households using cheap, low-quality coal.
- **Health impacts**: Causes immediate irritation of the nose and throat, coughing, shortness of breath, and wheezing in the lungs. In people with chronic respiratory conditions, exposure can trigger life-threatening attacks within minutes. It is also a major cause of acid rain, which damages forests and crops.

DETAILED BREAKDOWN OF MEASURES: PHASE I (URGENT INTERVENTIONS)

1. **Ban on coal usage in private households**
    - **PRIMARY FOCUS:** [PM2.5] [SO_2 – Sulphur dioxide]
    - **Rationale:** The combustion of coal in individual household heating systems is proven to be the single largest source of lethal concentrations of PM2.5 particles and SO_2 during the winter season.
    - **Implementation:** Adoption of a decision banning the sale and use of low-energy, high-sulphur coal within the boundaries of urban core areas.
    - **Benefits:** Immediate and substantial reduction in sulphur dioxide and soot concentrations, and reduced pressure on hospital pulmonary departments.
2. **Air Purifiers in Schools and Kindergartens**
    - **PRIMARY FOCUS**: [PM2.5]
    - **Rationale:** Children spend most of their day indoors, where air quality is often just as poor as outside. This directly affects their learning ability and concentration.
    - **Implementation:** Urgent public procurement for public institutions. Launch and promote an initiative for donations from parents and companies to acquire air purifiers for kindergartens and schools.
    - **Benefits**: Protection of children's neurological development, reduction of school absenteeism, and positive public impact.
3. **Protocol on the behavior of educational institutions**
    - **PRIMARY FOCUS**: [PM2.5] [NOx]
    - **Rationale**: Currently there is no system; children are often taken outside for physical education even when the air is dangerous, leading to deep inhalation of toxins.
    - **Implementation**: Mandatory regulation: Green (play outside), Yellow (reduced activity), Red (strict ban on going out).
    - **Benefits**: Zero implementation cost, high effectiveness in preventing acute respiratory problems.
4. **Ban on removal of DPF filters, EGR valves and AdBlue systems in vehicles**
    - **PRIMARY FOCUS**: [NOx] [PM2.5]
    - **Rationale**: It is a mass phenomenon that environment protection systems are being removed from

imported diesel vehicles (Euro 5/6), which makes the vehicle "toxic" like a 30-year-old vehicle. The DPF filter removes soot and PM2.5 particles, the EGR valve reduces the formation of NOx in the engine, AdBlue chemically removes NOx from the exhaust.

- **Implementation**: Amendment of the law, which treats the physical and software shutdown of these systems as a criminal offense or a serious offense for service inspection facilities.
- **Benefits:** Reduction of carcinogenic substances in cities without the need for a driving prohibition.

5. **Mobile controls and responsibility of technical inspection facilities**

- **PRIMARY FOCUS**: [NOx] [PM2.5]
- **Rationale**: Many vehicles undergo technical inspection illegally. Corruption at this level directly threatens the health of citizens.
- **Implementation**: Equipping the police with mobile exhaust fumes analyzers. If the vehicle on the road does not meet the standards, a fine is paid by the technical inspection station that released it. Potentially introduce an increased price for registering vehicles that do not meet eco regulations in the first phase of implementation.
- **Benefits**: Elimination of corruption by fear of losing the inspection license and penalizing the worst polluters on the roads.

6. **Free public transport during high pollution episodes**

• **PRIMARY FOCUS**: [NOx] [PM2.5]

• **Rationale**: During temperature inversions, pollution remains "trapped" in the basins. In these situations, number of vehicles in the streets must be reduced immediately.

• **Implementation**: Proclamation of "Eco-alarm" when the pollution index exceeds a critical value. Public transport becomes free for all citizens with an increased number of lines.

• **Benefits**: Reduction of NOx gases in "street canyons" and popularization of public transport.

7. **Construction site hygiene and dust control**

• **PRIMARY FOCUS**: [PM10 - Larger dust] [PM2.5]

• **Rationale**: Trucks from the construction sites bring mud to the asphalt. That mud dries and turns into fine dust that is constantly raised into the air by vehicles (resuspension).

• **Implementation:** Legal obligation to wash vehicle wheels before entering the public road. Draconian fines for investors if mud is spotted on the road.

• **Benefits:** Visibly cleaner streets and reduction of the amount of dust in the summer and autumn months

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DETAILED ELABORATION OF MEASURES: PHASE II (STRATEGIC TRANSITION OF 1-3 YEARS)

1. **Public Energy Efficiency Fund (PEEF) for "warming"**
   - **PRIMARY FOCUS: [PM2.5]**
   - **Rationale:** The only way for citizens to stop heating using fossil fuels is for the alternative to be economically profitable.
   - **Implementation:** The fund subsidizes 50% of the costs of switching to heat pumps and insulation. The state guarantees interest-free loans for the rest. Bring together all funding sources, such as EBRD grants for energy efficiency projects.
   - **Benefits:** Permanent solution to pollution, energy independence, growth of the construction sector.
2. **Introduction of energy certificates (EPC) and the "Green Block Tariff" for the electricity usage**
   - **PRIMARY FOCUS: [PM2.5][Energy efficiency]**
   - **Rationale**: A typical non-insulated house in Bosnia and Herzegovina (energy class G) consumes over 200 kWh/m² per year for heating. An energy-efficient house (class A) consumes only 15 kWh/m². Uninsulated houses have to burn over 10 times more fuel for the same thermal comfort, creating a lot of pollution.
   - **Implementation:** Establishing a system of energy certification (EPC) of real estate, modelled on the EPC system in the European Union - similar to the system for certifying the energy efficiency of household appliances. Introduction of the "Green tariff block" for electricity during the winter season. Households that have a high efficiency certificate (e.g. class B or higher) are entitled to cheaper electricity within a defined limit (e.g. the first 1500 kWh per month).
   - **Benefits:** A strong financial motive for heating houses, reducing the pressure on the electrical network and switching from dirty fuels to electricity. Transparency in the energy efficiency of real estate.
3. **Abolition of customs on clean energy equipment and electric vehicles**
   - **PRIMARY FOCUS: [PM2.5] [NOx]**
   - **Rationale:** The state should stimulate the transition to clean air. High prices are a barrier.
   - **Implementation**: Introduction of 0% customs rate on heat pumps, solar panels, inverters, as well as new and used electric vehicles and chargers.
   - **Benefits**: Faster adoption of new technologies and the rejuvenation of the driving fleet with zero-emission vehicles**.**
4. **Introduction of a dedicated "Eco-tax"**
   - **PRIMARY FOCUS: [PM2.5] [NOx]**
   - **Rationale:** Currently, pollution is "free", while ecological solutions cost money. A "polluter pays"

mechanism is needed, which will financially discourage the use of dirty technologies and partially ensure a stable source of the money needed for the transition.

- **Implementation:** Introduction of a phased tax for high emitters (e.g. vehicles of the lowest Euro standards, vehicles without DPF/AdBlue systems, coal-fired plants, industries that do not respect the standards). All revenues go to the dedicated PEEF, exclusively intended for subsidizing energy efficiency measures. The standard of taxation is gradually raised over time.

- **Benefits**: Creating an economic motive for protecting the environment instead of unpopular bans and relying on the conscience of users. Self-sustainable financing of the big portion of the subsidies.

5. **Mandatory installation of calorimeters**

   - **PRIMARY FOCUS: [PM2.5] [Energy efficiency]**
   - **Rationale:** Charging "per square meter" does not motivate savings. Wasteful energy makes heating plants use more fuel.
   - **Implementation**: Legal obligation to switch to consumption billing within 3 years for all buildings on the district heating system.
   - **Benefits**: Fairer billing, lower bills for conscientious citizens and reduced emissions from heating plants.

6. **Introduction of more modern stoves and filters in individual fire pits**

   - **PRIMARY FOCUS: [PM2.5]**
   - **Rationale:** Despite the energy transition measures, it is certain that burning wood will remain the most common way of heating individual households in the RS for an even longer period. The choice of a wood-burning stove is mainly driven by price, and cheaper and outdated stoves are generally not energy efficient.
   - **Implementation:** Partial or complete subsidization of the replacement of worn-out furnaces with newer, more modern EPA/EU ECO certified furnaces. For households that still exceed the limits of harmful emissions, subsidize the installation of electrostatic precipitators (ESP) on chimneys.
   - **Benefits**: Reduction of PM2.5 concentration up to over 80% with acceptable costs.

7. **Revitalization of public transport: Improving the quality and stimulating the use of public transport**

   - **PRIMARY FOCUS: [NOx] [PM2.5]**
   - **Rationale**: Efficient and financially favorable public transport would greatly reduce the use of private vehicles, and therefore the emission of harmful gases and unbearable crowds.
   - **Implementation**: Reform of city lines in cooperation with experts while respecting the wishes of users. Introduction of new lines and electric buses. Drastic increase in parking prices in urban areas in order to stimulate the use of public transport. Introduction of fees for private vehicles entering city zones. The money from the fees goes to the PEEF. Self-sustainable financing of part of the subsidies.

- **Benefits**: Reduction of emissions and congestion in urban areas

8. **Firewood drying and distribution network**

- **PRIMARY FOCUS: [PM2.5]**
- **Rationale:** Burning a kilogram of raw beech wood (about 50% humidity) produces about 2.3 kWh/kg, while a kilogram of dry wood (about 20% humidity) produces 4.1 kWh/kg of heat energy. In practice, it is necessary to order almost twice as much raw wood for the same amount of heat.
- **Implementation:** State warehouses store and dry wood a year in advance and sell it in the fall at stable prices.
- **Benefits:** Reduction of PM particle emissions by over 50% with a much smaller amount of firewood required.

9. **Prohibition of burning waste outdoors (Rubber/Plastic)**

- **PRIMARY FOCUS: [PM2.5] [Dioxins and Furans]**
- **Rationale:** Burning tires, plastics and cables (often to obtain copper) releases the most toxic compounds known to enter the food chain.
- **Implementation:** Inspection focus on "black spots". High penalties specifically for burning artificial materials, treating it as a threat to public health.
- **Benefits:** Prevention of most serious diseases and protection of agricultural land from permanent contamination.

10. **National network of monitoring stations**

- **PRIMARY FOCUS: [All pollutants: PM2.5, PM10, NOx, SO2]**
- **Rationale:** The lack of official data makes it possible to deny the problem.
- **Implementation:** Installation of certified stations in all major cities in RS and public web portal in real time.
- **Benefits**: Public trust and the possibility of precise planning of measures.

11. **Industry standards and PRTR register**

- **PRIMARY FOCUS: [Industrial emissions]**
- **Rationale:** The public has the right to know exactly how much each factory is polluting (Aarhus Convention).
- **Implementation:** Establishing a discharge register (PRTR) and 24-hour monitoring on chimneys.
- **Benefits:** Greater responsibility of the industry and alignment with EU standards.

12. **Increasing import Euro standards for vehicles**

- **PRIMARY FOCUS**: [NOx] [PM2.5]

- **Rationale:** To prevent Bosnia and Herzegovina from becoming a wasteland for old diesel vehicles from the EU.
- **Implementation:** Announcement of raising the minimum standard for vehicle import (e.g. to Euro 6) with a delay of 2-3 years. Eco tax or high price of registration for older Euro categories.
- **Benefits:** Long-term rejuvenation of the vehicle fleet and, above all, reduction of NOx pollution

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