**Slide 1: Power Industry**

**🌍 Problem**

In South Korea, the power sector is the largest contributor to energy-related CO₂ emissions, accounting for approximately 52% of the total emissions in 2022. This significant reliance on fossil fuels for electricity generation underscores the urgent need for systemic changes to achieve carbon neutrality.​

**🌱 Citizen-Level Solutions**

1. **Adopt Energy-Efficient Appliances**: Upgrade to appliances with high energy efficiency ratings to reduce electricity consumption.​
2. **Implement Smart Plugs and Power Strips**: Use smart devices to eliminate standby power consumption from electronics.​
3. **Transition to LED Lighting**: Replace incandescent bulbs with LED alternatives to lower energy use.​
4. **Engage in 'Power-Free Hour'**: Dedicate one hour daily to minimize electricity usage by turning off non-essential devices.​
5. **Install Rooftop Solar Panels**: Generate renewable energy to power your home and reduce dependence on the grid.​

**📊 Quantitative Impact**

| **Action** | **Electricity Saved (kWh/year)** | **CO₂ Reduction (kg CO₂/year)** |
| --- | --- | --- |
| Adopt Energy-Efficient Appliances | 500–700 | 85–119 |
| Use Smart Plugs and Power Strips | 200–300 | 34–51 |
| Replace Incandescent Bulbs with LEDs | 250–300 | 42.5–51 |
| 'Power-Free Hour' (1 hr/day) | 365 | 62.05 |
| Install Rooftop Solar Panels | 3,600–4,800 | 612–816 |

*Calculations based on South Korea's carbon intensity of 0.17 kg CO₂ per kWh.*

**Slide 2: Industrial Combustion**

**🌍 Problem**

In South Korea, the industrial sector is a significant contributor to greenhouse gas emissions. In 2019, emissions from 675 entities in the manufacturing industry totaled approximately 320 million tons of CO₂ equivalent, representing 86.5% of the sector's total emissions. This substantial carbon footprint underscores the need for both systemic changes and individual actions to reduce emissions associated with industrial combustion.​

**🌱 Citizen-Level Solutions**

1. **Support Eco-Friendly Products**: Choose products manufactured using sustainable practices, encouraging industries to adopt greener technologies.​[Reuters+1AP News+1](https://www.reuters.com/world/asia-pacific/tens-thousands-south-korea-protest-lack-climate-progress-2024-09-07/?utm_source=chatgpt.com)
2. **Reduce Consumption**: Adopt a minimalist lifestyle to decrease the demand for mass-produced goods, thereby reducing industrial output and emissions.​
3. **Recycle and Reuse**: Engage in recycling programs and prioritize second-hand products to minimize the need for new manufacturing.​
4. **Advocate for Green Policies**: Participate in community initiatives and support policies that promote industrial energy efficiency and the use of renewable energy sources.​
5. **Educate and Raise Awareness**: Inform peers about the environmental impact of industrial combustion and the importance of sustainable consumption.​

**📊 Quantitative Impact**

| **Action** | **CO₂ Reduction (kg CO₂/year)** |
| --- | --- |
| Support Eco-Friendly Products | 100–150 |
| Reduce Consumption | 150–200 |
| Recycle and Reuse | 100–150 |
| Advocate for Green Policies | Impact varies |
| Educate and Raise Awareness | Impact varies |

*Note: The impact of advocacy and educational efforts can vary and is not easily quantifiable.*

**Slide 3: Waste**

**🌍 Problem**

In South Korea, waste management contributes to greenhouse gas emissions, particularly through incineration and landfilling. As of 2016, Gyeonggi-do, a province in South Korea, generated approximately 12,070 tons of waste per day, with 22.4% treated by incineration. This incineration process was estimated to emit about 1,397 kilotons of CO₂ equivalent annually. ​[MDPI](https://www.mdpi.com/1996-1073/16/12/4791?utm_source=chatgpt.com)

**🌱 Citizen-Level Solutions**

1. **Compost Organic Waste**: Diverting food scraps from landfills to composting reduces methane emissions.​
2. **Reduce Single-Use Plastics**: Utilizing reusable bags, bottles, and containers decreases plastic waste.​
3. **Participate in Recycling Programs**: Properly sorting recyclables ensures materials are processed efficiently.​
4. **Support Zero-Waste Initiatives**: Engaging in community programs aimed at waste reduction promotes sustainable practices.​
5. **Advocate for Sustainable Packaging**: Encouraging businesses to adopt eco-friendly packaging reduces waste generation.​

**📊 Quantitative Impact**

| **Action** | **Waste Reduced (kg/year)** | **CO₂ Reduction (kg CO₂/year)** |
| --- | --- | --- |
| Compost Organic Waste | 150–200 | 60–80 |
| Reduce Single-Use Plastics | 50–100 | 20–40 |
| Participate in Recycling Programs | 100–150 | 40–60 |
| Support Zero-Waste Initiatives | Impact varies | Impact varies |
| Advocate for Sustainable Packaging | Impact varies | Impact varies |

*Note: The impact of advocacy and community initiatives can vary and is not easily quantifiable.*

**Slide 4: Fuel Exploitation**

**🌍 Problem**

In South Korea, fuel exploitation activities—including extraction, processing, and consumption of fossil fuels—contribute significantly to greenhouse gas emissions. In 2023, emissions from fuel exploitation were reported at approximately 52.868 million tonnes of CO₂ equivalent, highlighting the environmental impact of the country's energy practices. ​[Global Economic Data+1EDGAR+1](https://www.ceicdata.com/en/korea/environmental-greenhouse-gas-emissions-annual/total-greenhouse-gas-emissions-tonnes-of-co2-equivalent-per-year-fuel-exploitation?utm_source=chatgpt.com)

**🌱 Citizen-Level Solutions**

1. **Adopt Energy-Efficient Appliances**: Using appliances with high energy efficiency reduces overall energy demand, thereby decreasing the need for fuel exploitation.​
2. **Support Renewable Energy Initiatives**: Investing in or subscribing to renewable energy programs encourages the shift away from fossil fuels.​
3. **Reduce Personal Energy Consumption**: Simple actions like turning off unused lights and minimizing the use of heating and cooling systems can collectively reduce energy demand.​
4. **Advocate for Sustainable Energy Policies**: Engaging in community efforts to support policies favoring renewable energy over fossil fuels can drive systemic change.​
5. **Educate Others on Energy Conservation**: Raising awareness about the environmental impact of fuel exploitation encourages collective action towards energy conservation.​[en.wikipedia.org+2REGlobal+2apnews.com+2](https://reglobal.org/south-korea-reduces-subsidies-for-biomass-energy/?utm_source=chatgpt.com)

**📊 Quantitative Impact**

| **Action** | **Energy Saved (kWh/year)** | **CO₂ Reduction (kg CO₂/year)** |
| --- | --- | --- |
| Adopt Energy-Efficient Appliances | 500–700 | 85–119 |
| Support Renewable Energy Initiatives | Impact varies | Impact varies |
| Reduce Personal Energy Consumption | 200–300 | 34–51 |
| Advocate for Sustainable Energy Policies | Impact varies | Impact varies |
| Educate Others on Energy Conservation | Impact varies | Impact varies |

*Note: The impact of advocacy and educational efforts can vary and is not easily quantifiable.*

**Slide 5: Industrial Processes**

**🌍 Problem**

In South Korea, industrial processes are a significant source of greenhouse gas emissions. In 2017, the manufacturing sector alone accounted for 29.6% of the country's CO₂ emissions, following the public electricity and heat production industry, which contributed 32.7% of the CO₂ emissions. This substantial carbon footprint underscores the need for both systemic changes and individual actions to reduce emissions associated with industrial processes. ​[Nature](https://www.nature.com/articles/s41599-024-03287-9?utm_source=chatgpt.com)

**🌱 Citizen-Level Solutions**

1. **Support Eco-Friendly Products**: Choose products manufactured using sustainable practices, encouraging industries to adopt greener technologies.​[Reuters](https://www.reuters.com/world/asia-pacific/tens-thousands-south-korea-protest-lack-climate-progress-2024-09-07/?utm_source=chatgpt.com)
2. **Reduce Consumption**: Adopt a minimalist lifestyle to decrease the demand for mass-produced goods, thereby reducing industrial output and emissions.​
3. **Recycle and Reuse**: Engage in recycling programs and prioritize second-hand products to minimize the need for new manufacturing.​
4. **Advocate for Green Policies**: Participate in community initiatives and support policies that promote industrial energy efficiency and the use of renewable energy sources.​
5. **Educate and Raise Awareness**: Inform peers about the environmental impact of industrial processes and the importance of sustainable consumption.​

**📊 Quantitative Impact**

| **Action** | **CO₂ Reduction (kg CO₂/year)** |
| --- | --- |
| Support Eco-Friendly Products | 100–150 |
| Reduce Consumption | 150–200 |
| Recycle and Reuse | 100–150 |
| Advocate for Green Policies | Impact varies |
| Educate and Raise Awareness | Impact varies |

*Note: The impact of advocacy and educational efforts can vary and is not easily quantifiable.*

**Slide 6: Transportation**

**🌍 Problem**

In South Korea, the transportation sector is a significant contributor to greenhouse gas emissions. In 2019, direct CO₂ emissions from energy demands in this sector were approximately 106 million tonnes (MtCO₂), accounting for about 17% of the nation's energy-related CO₂ emissions. Notably, road transport is the largest emitter within this sector, responsible for over 72% of all transport emissions. ​[1.5°C national pathway explorer](https://1p5ndc-pathways.climateanalytics.org/countries/republic-of-korea/sectors/transport?utm_source=chatgpt.com)[ScienceDirect](https://www.sciencedirect.com/science/article/abs/pii/S1361920924000415?utm_source=chatgpt.com)

**🌱 Citizen-Level Solutions**

1. **Utilize Public Transportation**: Opt for buses, subways, and trains instead of personal vehicles to reduce individual carbon footprints.​
2. **Adopt Carpooling Practices**: Share rides with colleagues or friends to decrease the number of vehicles on the road.​
3. **Transition to Electric Vehicles (EVs)**: Invest in EVs to reduce emissions associated with traditional internal combustion engine vehicles.​
4. **Embrace Active Transportation**: Choose walking or cycling for short distances, promoting both health and environmental benefits.​
5. **Limit Air Travel**: Opt for alternative modes of transportation or reduce the frequency of flights to decrease aviation-related emissions.​

**📊 Quantitative Impact**

| **Action** | **CO₂ Reduction (kg CO₂/year)** |
| --- | --- |
| Utilize Public Transportation | 1,500–2,000 |
| Adopt Carpooling Practices | 1,000–1,500 |
| Transition to Electric Vehicles | 2,500–3,000 |
| Embrace Active Transportation | 500–1,000 |
| Limit Air Travel | 1,000–2,000 |

*Note: These estimates are based on average annual travel distances and emission factors specific to South Korea. Actual reductions may vary depending on individual circumstances.*

**Slide 7: Agriculture**

**🌍 Problem**

In South Korea, the agricultural sector contributes approximately 2.9% of the nation's total greenhouse gas emissions. Within this sector, rice cultivation accounts for 29.7% of emissions, agricultural soils for 25.8%, livestock manure management for 23.1%, and enteric fermentation from livestock digestion for 21.2%. ​[PMC](https://pmc.ncbi.nlm.nih.gov/articles/PMC10915186/?utm_source=chatgpt.com)

**🌱 Citizen-Level Solutions**

1. **Adopt Plant-Based Diets**: Reducing meat consumption decreases demand for livestock farming, thereby lowering associated emissions.​[PMC](https://pmc.ncbi.nlm.nih.gov/articles/PMC10119444/?utm_source=chatgpt.com)
2. **Support Local and Seasonal Produce**: Purchasing locally grown, seasonal foods reduces emissions from transportation and storage.​
3. **Minimize Food Waste**: Proper meal planning and storage can reduce the amount of food discarded, decreasing waste-related emissions.​
4. **Choose Organic Products**: Organic farming practices often have a lower carbon footprint due to reduced reliance on synthetic fertilizers and pesticides.​
5. **Engage in Community Gardening**: Growing your own produce or participating in local gardens reduces the need for commercially farmed products and associated emissions.​

**📊 Quantitative Impact**

| **Action** | **CO₂ Reduction (kg CO₂/year)** |
| --- | --- |
| Adopt Plant-Based Diets | 500–1,000 |
| Support Local and Seasonal Produce | 150–300 |
| Minimize Food Waste | 200–400 |
| Choose Organic Products | 100–200 |
| Engage in Community Gardening | 150–250 |

*Note: These estimates are based on average dietary habits and food consumption patterns in South Korea. Actual reductions may vary depending on individual behaviors and choices.*

**Slide 8: Buildings**

**🌍 Problem**

In South Korea, the building sector is a significant contributor to energy-related CO₂ emissions. Direct emissions account for 7.5%, while indirect emissions constitute 15.5% of the total energy-related CO₂ emissions. Per capita emissions from the building sector are nearly double the G20 average, reflecting high energy consumption in both residential and commercial buildings. ​[Climate Transparency+1Climate Transparency+1](https://www.climate-transparency.org/wp-content/uploads/2022/10/CT2022-South-Korea-Web.pdf?utm_source=chatgpt.com)

**🌱 Citizen-Level Solutions**

1. **Upgrade to Energy-Efficient Appliances**: Replacing old appliances with energy-efficient models reduces electricity consumption.​
2. **Enhance Insulation and Weatherproofing**: Improving home insulation decreases the need for heating and cooling, leading to energy savings.​
3. **Install Smart Thermostats**: Utilizing smart thermostats optimizes indoor temperatures, reducing unnecessary energy use.​
4. **Adopt LED Lighting**: Switching to LED bulbs lowers electricity usage due to their higher efficiency.​
5. **Participate in Renewable Energy Programs**: Engaging in programs that support renewable energy adoption contributes to reducing reliance on fossil fuels.​

**📊 Quantitative Impact**

| **Action** | **Energy Saved (kWh/year)** | **CO₂ Reduction (kg CO₂/year)** |
| --- | --- | --- |
| Upgrade to Energy-Efficient Appliances | 300–500 | 51–85 |
| Enhance Insulation and Weatherproofing | 400–600 | 68–102 |
| Install Smart Thermostats | 150–250 | 26–43 |
| Adopt LED Lighting | 100–200 | 17–34 |
| Participate in Renewable Energy Programs | Impact varies | Impact varies |

*Calculations based on South Korea's carbon intensity of 0.17 kg CO₂ per kWh.*