

Catalogue for the Guidance of Foreign Invested Industries **(2011 Version)**

Catalogue of Industries in which Foreign Investment is Encouraged

I. Agriculture, Forestry, Animal Husbandry and Fishery

1. Planting, development and production of woody plants that contain edible oils or that can be used as seasonings or industrial raw materials
2. Development of technologies in the cultivation of green, organic vegetables (including edible fungi and melons), dried and fresh fruits, and tea leaves, and the relevant production
3. Development of new technologies in the cultivation of sugar crops, fruit trees, pasture, etc., and the relevant production
4. Production of flowers, and construction and operation of nurseries
5. Planting of rubber trees, oil palm, sisal and coffee
6. Planting and cultivation of Chinese herbal medicine (limited to Sino-foreign equity/cooperative joint venture operations)
7. Returning of crop straw to farmland and the comprehensive utilization thereof; development and production of organic fertilizer resources
8. Planting of trees or bamboos, and development of improved varieties; development of new varieties of polyploid trees
9. Breeding of aquatic larvae (excluding rare and endemic species unique to China)
10. Construction and operation of ecological environment protection projects, e.g. the planting of trees and grasses to prevent and cure desertification and soil erosion
11. Aquaculture, open ocean cage aquaculture, industrial aquaculture and ecological mariculture

II. Mining Industry

1. Exploration and exploitation of coal-bed methane and utilization of mine gas (limited to Sino-foreign equity/cooperative joint venture operations)
2. Venture prospecting and exploitation of oil and natural gas (limited to Sino-foreign equity/cooperative joint venture operations)
3. Exploitation of low permeability oil/gas reservoirs (fields) (limited to Sino-foreign equity/cooperative joint venture operations)
4. Development and application of enhanced oil recovery (EOR) and other relevant new technologies (limited to Sino-foreign equity/cooperative joint venture operations)
5. Development and application of new technologies for oil exploration and exploitation in areas of geophysical prospecting, drilling, well logging, mud logging and down-hole operation (limited to Sino-foreign equity/cooperative joint venture operations)
6. Exploration and exploitation of unconventional oil resources including oil shale, oil sand, heavy crude oil and extra-heavy crude oil (limited to Sino-foreign equity/cooperative joint venture operations)
7. Exploration, exploitation and beneficiation of iron and manganese minerals
8. Development and application of new technologies for increasing the utilization rate of mine tailings and the comprehensive application of ecological restoration technology in mining areas
9. Exploration and exploitation of unconventional natural gas resources such as shale gas and submarine gas hydrate (limited to Sino-foreign equity/cooperative joint venture operations)

III. Manufacturing

(I) Agro-food Processing Industry

1. Development and production of bio-feed, straw feed and aquatic feed
2. Processing of aquatic products, purification and processing of shellfish, and development of seaweed health food
3. Processing of vegetables, dried and fresh fruit, and livestock and poultry products

(II) Food Manufacturing

1. Development and production of baby foods, foods for the elderly, and health foods
2. Development and production of forest foods
3. Production of natural food additives and food ingredients

(III) Beverage Manufacturing

1. Development and production of fruit and vegetable drinks, protein drinks, tea drinks, coffee drinks and botanical drinks

(IV) Tobacco

1. Processing of cellulose diacetate and tow (limited to Sino-foreign equity/cooperative joint venture operations)

(V) Textile

1. Production of multi-functional industrial textiles that are lightweight, high-strength, high/low temperature resistant, chemical resistant, and light-resistant, and manufactured using non-woven, weaving, knitting or their composite techniques
2. Weaving, dyeing and post-processing of high-end textiles and fabric using advanced energy efficient and emission reduction technologies and equipment
3. Processing of special natural fibers (including special animal fibers such as cashmere wool, hemp fiber, silk, as well as colored cotton, etc.) that comply with requirements on ecological and comprehensive resource utilization and environmental protection

4. Clothing production using computer integrated manufacturing system

5. Production of functional, ecological, or special purposes clothing

6. Production of high-end carpets, embroidery and drawnwork products

(VI) Leathers, Furs, Down and Feathers and Related Products

1. Cleaning and processing of leather and furs

2. Finishing of leather using new technology

3. Processing of high-grade leather

4. Comprehensive use of leather wastes

(VII) Wood Processing and Wood, Bamboo, Rattan, Palm fiber and Straw Products

1. Development of new technologies for the comprehensive utilization of forestry "three residues", namely, inferior quality lumbers, small-sized lumbers, firewood, as well as bamboo, and the development and production of the related new products

(VIII) Papermaking and Paper Products

1. Single production lines that mainly utilize overseas timber resources to produce chemical wood pulp with an annual production capacity of 300,000 tons or more, and single production lines producing chemi-mechanical wood pulp with an annual production capacity of 100,000 tons or more, and production lines for high-grade paper or paperboard built simultaneously (limited to Sino-foreign equity/cooperative joint venture operations)

(IX) Petroleum Processing, Coking and Nuclear Fuel Processing

1. Deep processing of needle coke and coal tar

(X) Manufacturing of Raw Chemical Materials and Chemical Products

1. Development and production of new downstream products of sodium calcium hypochlorite, polyvinyl chloride (PVC) and organosilicon

2. Auxiliary raw materials for the production of synthetic materials: production of hydrogen peroxide-based propylene oxide, epoxy chloropropane using the glycerol method, naphthalene dicarboxylate (NDC), 1,4-Cyclohexanedimethanol (CHDM)

3. Raw materials for the production of synthetic fibers: production of caprolactam, nylon 66 salt, melt-spinning spandex resins, and 1,3-propylene glycol

4. Synthetic rubber: production of solution styrene-butadiene rubber (excluding thermoplastic styrene-butadiene rubber), high cis butadiene rubber, butyl rubber, isoamyl rubber, polyurethane rubber, acrylate rubber, epichlorohydrin rubber, ethylene propylene rubber (EPR), fluorine rubber, silicon rubber and other special rubbers

5. Engineering plastics and plastic alloys: production of at least 60,000 tons annually of such products as non-phosgene polycarbonate

(PC), polyoxymethylene (POM), polyamides (nylon 6, nylon 66, nylon 11 and nylon 12), polyethylene vinyl acetate (EVA), polyphenyl thioether, poly(ether-ether-ketone), polyimide, polysulfone, polyether sulfone, polyarylate (PAR), and liquid crystal polymer (LCP)

6. Fine chemicals: new catalyst products and technologies, processing technologies for the commercialization of dyes (pigments), electronic chemicals and papermaking chemicals, food and feed additives, leather chemicals (excluding N,N-Dimethylformamide), oilfield chemicals, surfactants, water treatment chemicals, adhesives, production of inorganic fibers and nanomaterials, and deep processing of pigment encapsulation

7. Production of environment-friendly printing inks and aromatic oils

8. Production of natural spices, synthetic spices and single ion spices

9. Production of high-performance coatings, water-based automotive coatings and auxiliary water-based resins

10. Production of substitutes for chlorofluorocarbons

11. Production of high-performance fluororesin, fluorine coating materials, medical intermediates containing fluorine, environment-friendly refrigerant and detergent

12. Production of fluoride resources recovered from the phosphorus chemical industry and aluminum smelters

13. Development of new forestry chemical products related technologies, and development and production of related new products

14. Development and production of inorganic, organic and biological membranes for environmental protection purposes

15. Development and production of new types of fertilizers: bio-fertilizers, high concentration potassium fertilizers, compound fertilizers, slow/controlled release fertilizers, compound microbial inoculants, compound microbial fertilizers, decomposition agents for straws and refuse, and other microbial agents with special functions

16. Development and production of efficient, safe and environment-friendly new varieties, new formulations, specialized intermediates, or auxiliary agents of agricultural chemicals, and development and application of relevant clean production processes (process of ethylene-based acetochlor, calcium-based paraquat, or aqueous phase chlorpyrifos, process of recovery of methyl chloride with glyphosate, production of chiral and stereospecific pesticides by oriented synthesis, and synthetic technique of diethyl thiophosphoryl chloride)

17. Development and production of biological pesticides and biological prevention and control products: microbial insecticides, microbial fungicides, agricultural antibiotics, insect pheromones, natural enemies and microbial herbicides

18. Comprehensive utilization, treatment and disposal of waste gas, liquid waste, and waste residue

19. Production of organic polymer materials: aircraft skin coating, rare earth cerium sulphide red dyes, lead-free electronic packaging materials, lithographic slurry specifically for color plasma screens, small-diameter large surface area microfibers, high-precision fuel filter paper, and lithium-ion battery diaphragms

(XI) Pharmaceutical Industry

1. Production of new compound drugs or drugs containing active ingredients (including active pharmaceutical ingredients and formulations)

2. Amino acids: production of tryptophan using zymotechnics process, histidine, and methionine used in feed, etc

3. Production of new anticarcinogenic drugs, cardiovascular drugs, cerebrovascular drugs, and nervous system drugs

4. Production of new types of drugs employing bioengineering and biotechnology

5. Production of HIV/AIDS vaccines, Hepatitis C vaccines, and contraceptive vaccines, as well as new types of vaccines for cervical carcinoma, malaria, and hand, foot, and mouth disease

6. Production of biovaccines

7. Development and production of marine drugs

8. Pharmaceutical formulations: production of new formulations and new products employing such new technologies as slow release, controlled release, targeting, and percutaneous absorption
9. Development and production of new pharmaceutical excipients
10. Production of special antibacterial active pharmaceutical ingredients for animals (including antibiotics and chemically synthesized types)
11. Production of new products and new formulations of antibacterial drugs, anthelmintics, insecticides and anti-coccidiosis drugs for veterinary use
12. Production of new types of diagnostic reagents

(XII) Chemical Fiber Manufacturing

1. Production of high- and new- tech chemical fibers (excluding viscose fibers), including differential chemical fibers, aramid fibers, carbon fibers, high-strength/high modulus polyethylene fibers and polyphenylene sulfide (PPS) fibers
2. Production of new types of polyester for fiber or non-fiber use: polytrimethylene terephthalate (PPT), polyethylene naphthalate (PEN), polycyclohexylene dimethylene terephthalate (PCT), and glycol-modified polyethylene terephthalate (PETG)
3. Production of biomass fibers by utilizing new types of renewable resources and environmentally friendly process, including new solvent spun cellulose fibres (Lyocell), regenerated cellulose fibres using bamboo, hemp, etc, polylactic acid (PLA) fibers, chitin fibre, polyhydroxyalkanoates (PHA) fibers, animal and plant protein fibers, etc.
4. Production of polyamide with a single-line daily production capacity of 150 tons or more
5. Production of aramid fibers and cords for radial tires

(XIII) Plastic Products

1. Development and production of new types of photoecological, multiple-functional, wide agricultural film
2. Decomposition and reutilization of plastic waste
3. Development of new plastic soft packaging technologies, and development and production of new varieties of plastic soft packaging products (including high-barrier and multifunctional film, and relevant raw materials)

(XIV) Nonmetallic Mineral Products

1. Development and production of building materials conserve energy, environmentally friendly, recycles waste, light-weight, high strength, high performance, and multi-functional
2. Production of energy-saving and high-efficiency chemical building materials that substitutes steel and wood with plastic
3. Production of SBS/APP modified bitumen waterproof rolls with an annual output of 10 million square meters or more; ethylene propylene diene monomer (EPDM) rubber waterproof rolls with width of two meters or longer, and relevant auxiliary materials; polyvinyl chloride (PVC) waterproof rolls with width of two meters or longer; and thermoplastic polyolefin (TPO) waterproof rolls
4. Development and production of functional glass using new technologies: electromagnetic wave shielding glass; glass substrate for microelectronic use; infrared transparent lead-free glass; electronic-grade large-scale quartz glass products (pipes, plates, crucibles, instruments and utensils, etc.); multi-functional windshield glass with excellent optical performance; extreme materials and products for use in information technologies (including quartz glass tube and ceramic substrate for waveguide-grade, high precision optical fiber preform rod); purification processing of raw materials for high pure ($\geq 99.998\%$) or ultrapure ($\geq 99.999\%$) crystal
5. Production of conductive glass for thin film batteries and glass for solar illuminator
6. Production of glass fiber products and special glass fibers: low dielectric glass fibers, quartz glass fibers, high silica glass fibers, high strength and high elasticity glass fibers, ceramic fibers, etc. and their products
7. Production of optical fibers and their products: optical fiber bundles for image transmission and laser optical fibers for medical treatment; super second-generation and third-generation microchannel plates; optical fiber panels; image inverters; and glass fiber cones
8. Standardized refinement of ceramics raw materials and production of high-grade decorative materials used in ceramics
9. Production of environmentally friendly (non-chromizing) fire-resistant materials used in furnaces, including cement, electronic glass, ceramics, and microporous carbon bricks
10. Production of aluminum nitride (AlN) ceramic substrates and porous ceramics
11. Production of inorganic and nonmetallic new materials and products: composite materials, special ceramics, special sealing materials (including high-speed oil-seal materials), special binding materials, special friction materials (including high-speed friction brake products), special latex materials, underwater acoustic rubber products, and nanophase materials
12. Production of organic-inorganic composite foam insulation materials
13. Production of high-tech composite materials: continuous fiber reinforced thermoplastic composite materials and prepreg materials, auxiliary materials for molding of resin-based composite materials with thermal resistance of more than 300 degrees Celsius or above, resin-based composite material (including high-end sports products, and light-weight, high-strength transport parts), special function composite materials and products (including products made of composite materials used in deep water or for diving, and for medical treatment and recuperation), carbon or carbon composite materials, high-performance ceramic-based composite materials and products, metal or glass-based composite materials and products, metallic layer shaped composite materials and products, ultra high pressure composite rubber hoses (pressure $\geq 320\text{MPa}$) and large passenger aircraft tires
14. Production of raw materials for precision and high-performance ceramics: ultra-fine silicon carbide (SiC) powder (purity $> 99\%$, average particle diameter $< 1\mu\text{m}$), ultra-fine silicon nitride powder (Si_3N_4) (purity $> 99\%$, average particle diameter $< 1\mu\text{m}$), high-purity ultra-fine alumina powder (purity $> 99\%$, average particle diameter $< 0.5\mu\text{m}$), low-temperature sintered zirconia (ZrO_2) powder (sintering temperature < 1350 degrees Celsius), high-purity aluminium nitride (AlN) powder (purity $> 99\%$, average particle diameter $< 1\mu\text{m}$), rutile titanium dioxide (TiO_2) powder (purity $> 98.5\%$), white carbon black (particle diameter $< 100\text{nm}$) and barium titanate (purity $> 99\%$, average particle diameter $< 1\mu\text{m}$)
15. Development and production of high-quality intraocular lens and crystal film products: high-quality artificially synthesized crystal (piezoelectric crystal and ultraviolet ray transmitting crystal); super-hard crystal (cubic boron nitride crystal); high-temperature resistant, highly-insulated, artificially synthesized crystal (artificially synthesized mica); new electro-optic crystal; high-power laser crystal and large-scale scintillation crystal; diamond-film tool; ultrathin, synthetic diamond saw blade with under 0.3mm thickness

16. Fine processing of nonmetal minerals (ultra-fine grinding, high purifying, refining and performance modifying)
17. Production of ultra-high-power graphite electrodes
18. Production of pearl mica (diameter 3 - 150 μ m)
19. Production of multi-dimensional and multi-directional integral fabrics and shape fabrics
20. Safe disposal of solid wastes using new dry process cement kilns
21. Recycling of building wastes
22. Comprehensive utilization of industrial by-product gypsum
23. Development and application of new technologies for comprehensive utilization of nonmetal mine tailings; and ecological restoration of mines

(XV) Nonferrous Metals Smelting and Rolling Industry

1. Production of silicon single crystals and polished wafers with 200mm or larger diameter
2. Production of high- and new- tech nonferrous materials: compound semiconductor materials (gallium arsenide, gallium phosphide, indium phosphide and gallium nitride); high-temperature superconducting materials; memory alloy materials (titanium nickel, copper-based and iron-based memory alloy materials); ultra-fine (nano) calcium carbide and ultra-fine (nano) crystal hard alloy; ultra-hard composite materials; precious metal composite materials; aluminum foils used for radiators; medium- and high-voltage cathode capacitor aluminum foils; special large aluminum alloy sections; aluminum alloy precision forging dies; overhead conductors for electrified railway lines; ultra-thin copper strips; copper alloy materials for corrosion-resistant heat exchangers; high-performance copper-nickel and copper-iron alloy strips; materials for processing beryllium copper strips, threads, pipes and rods; high-temperature resistant and anti-senescence tungsten filaments; magnesium alloy castings; lead-free solder; magnesium alloys and their products; foamed aluminum; titanium alloy strips and titanium welded pipes; sponge zirconium at atomic energy level; and deep-processed tungsten and molybdenum products

(XVI) Metal Products Manufacturing Industry

1. Research, development, and manufacture of new light-weight and environmentally friendly materials for aviation, aerospace, automobiles and motorcycles (including specialized aluminum sheets, aluminum-magnesium alloy materials and aluminum alloy motorcycle frames)
2. Development and production of hardware for construction, water heating equipment and hardware parts
3. Manufacture and processing (including the painting and processing of inner and outer surfaces of products) of metallic packing products (thickness < 0.3mm) used for packaging all kinds of contents including grains, oils and food, fruits and vegetables, beverages, and household chemical products
4. Manufacture of nickel-saving stainless steel products

(XVII) General Equipment Manufacturing Industry

1. Manufacture of high-end computer numerical controlled (CNC) machine tools and key spare parts: five-axis alignment CNC machine tools, CNC coordinate boring and milling processing center, CNC coordinate grinding machines, five-axis alignment CNC system and servomechanism installations, and high-speed ultra-hard cutting tools used for precision numerically controlled processing
2. Manufacture of multi-station forging forming machines of 1,000 tons or above
3. Manufacture of equipment for dismantling, crushing, and post-processing and sorting of scrap automobiles
4. Manufacture of flexible transfer lines (FTL)
5. Manufacture of vertical multi-joint industrial robots, welding robots and welding apparatus and equipment thereof
6. Manufacture of special processing machines: complete sets of laser cutting and welding equipment, laser precision processing equipment, computer numerically controlled low-speed wire-cut electrical discharge machines (LS-WEDMs) and sub-micron and ultra-fine grinders
7. Manufacture of wheeled and crawler cranes of 400 tons or above (limited to Sino-foreign equity/cooperative joint venture operations)
8. Design and manufacture of high-pressure plunger pumps of working pressure ≥ 35 MPa and engines, and low-speed large-torque engines of working pressure ≥ 35 MPa
9. Manufacture of integrated hydraulic-pressure multiple unit valve of working pressure ≥ 25 MPa, and electro-hydraulic proportional servo elements
10. Design and manufacture of valve terminal, pneumatic solenoid valve of less than 0.35W and high-frequency electrically-controlled gas valves of more than 200Hz
11. Design and manufacture of hydrostatic drive devices
12. Development and manufacture of non-contact gas film seals of pressure >10MPa and dry gas seals of pressure > 10MPa (including experimental apparatus)
13. Development and manufacture of macromolecule material device for automobiles (friction plates, remodeled phenolic pistons and nonmetallic hydraulic master/sub-pumps, etc.)
14. Manufacture of third- and fourth-generation car wheel hub bearings (functional components of wheel hub bearings with flanges and sensors inside or outside); bearings for high- or medium-grade computer numerically controlled (CNC) machine tools or processing centers (with more than three axis alignment function and 3-4 μ m repeated positioning precision); high-speed wire rod or plate rolling mill bearings (support bearings and work roll bearings for single-line wire rod mills with a speed of 120m/s or more and for thin-plate rolling mill processing plates with a thickness of 2mm or more); high-speed railway bearings (with a speed of more than 200km/h); low-noise bearings with vibration below Z4 (noise level: Z4, Z4P, V4, or V4P); P4 or P2 level bearings of various bearings; bearings of wind turbine generator set (mainshaft bearing of wind turbine generator set of 2 megawatts or above, speed increaser bearing, dynamo bearing, etc.); aircraft bearings (mainshaft bearing of aircraft engine, landing chassis bearing, transmission agent bearing, control loop bearing, etc.)
15. Manufacture of high-density, high-precision, complex-shaped powder metallurgical parts and chains used for automobile, engineering machinery, etc.
16. Manufacture of gear transmission used for wind power or high speed rail, gear transmission agent with adjustable blades used for vessels, and large-sized, heavy-load gear box
17. Manufacture of high-temperature resistant insulation materials (insulation grade F and H) and moulded insulation products
18. Development and manufacture of accumulator capsules, and rubber and plastic seals for hydropneumatic use
19. Manufacture of high-precision, high-strength (level 12.9 or above), special-shaped, assembly fasteners

20. Manufacture of miniature precision transmission junction piece (clutches)
21. Manufacture of coupling shaft for heavy rolling mills
22. Remanufacture of machinery such as machine tools, engineering machinery, railroad engine equipment, etc.; and remanufacture of automobile parts and components

(XVIII) Specialized Equipment Manufacturing Industry

1. Manufacture of trackless equipment for mining, loading and transport in mines, including: mechanically-driven tippers for mining with a capacity of 200 tons or more; mobile crushers; bucket wheel excavators with a capacity of 5,000 cubic meters per hour or more; loaders for mining purposes with a capacity of 8 cubic meters or more; and 2,500-kilowatt or above electrically-dragged coal mining machines
2. Manufacture of equipment for geophysical exploration and well logging: MEME seismometers; digital telemetric seismographs; digital imaging systems and digitally controlled well logging systems; devices and apparatus for horizontal wells, directional wells, drilling rigs; and measurement while drilling (MWD) tools
3. Manufacture of equipment for oil exploration, drilling, collection and transportation: floating drilling systems and floating production systems with an operating water depth of more than 1500 meters and the supporting subsea oil extraction, collection and transportation equipment
4. Manufacture of large-caliber rotary drilling rigs with a caliber of 2 meters or more and depth of 30 meters or more, push benches with a diameter of 1.2 meters or more, complete sets of large equipment with a pull-back force of 300 tons or more for laying underground pipes and lines without digging, and underground diaphragm wall construction drilling rigs
5. Design and manufacture of large bulldozers of 520 horsepower or above
6. Design and manufacture of silt removers with a capacity of 100 cubic meters per hour or more, and dredging device for dredgers with a capacity of 1,000 tons or more
7. Design and manufacture of equipment for the construction of concrete cut-off walls used for flood prevention dikes
8. Manufacture of underwater earthwork construction machinery: bulldozers, loaders and excavators operating nine meters underwater or deeper
9. Manufacture of equipment for maintenance and automatic testing of highways and bridges
10. Manufacture of equipment for operational monitoring, ventilation, disaster prevention and rescue systems of highway tunnels
11. Design and manufacture of maintenance machinery and inspection and monitoring equipment for large railway construction, railway tracks, bridges and tunnels, and other key parts and components
12. Manufacture of equipment for (asphaltic) linoleum tiles and equipment for producing metal roofs including galvanized steel sheets
13. Manufacture of equipment for environment-friendly, energy-saving, on-site polyurethane spraying waterproof and thermal insulation systems; technology of preparing polyurethane sealants and manufacture of relevant equipment; and technology of preparing improved silicone sealants and manufacture of relevant production equipment
14. Design and manufacture of high-precision strip mills (thickness precision of 10 microns)
15. Manufacture of ore dressing equipment for multi-element, fine-particle and refractory metal minerals
16. Manufacture of key equipment of complete sets of ethylene equipment with an annual capacity of 1 million tons or more: mixing granulators with an annual processing capacity of 400,000 tons or more, helical-conveyer centrifuges with a diameter of 1,000 mm or more, low-flow high-head centrifugal pump
17. Manufacture of complete sets of large coal chemical equipment (limited to Sino-foreign equity/cooperative joint venture operations)
18. Design and manufacture of metal product molds (extrusion dies for pipes, rods and section bars made of copper, aluminum, titanium and zirconium)
19. Design and manufacture of punching dies for automobile body covers, large-sized injection molds for dashboard, bumper, etc., and clamps and gauges for automobiles and motorcycles
20. Design and manufacture of production equipment for power batteries for automobiles
21. Design and manufacture of precise die molds (punching dies with a precision of higher than 0.02 millimeter, and cavity molds with a precision of higher than 0.05 millimeter)
22. Design and manufacture of nonmetal product molds
23. Manufacture of beer bottling equipment with a capacity of 60,000 bottles per hour or above, hot- and medium-temperature beverage bottling equipment with a capacity of 50,000 bottles per hour or above, aseptic filling equipment with a capacity of 36,000 bottles per hour or above
24. Technology of and key equipment manufacture for producing amino acids, enzyme preparations, food additives, etc.
25. Manufacture of complete sets and key parts of equipment for animal feed processing with a capacity of 10 tons per hour or above
26. Manufacture of equipment for lightweight corrugated boards and cartons with corrugation height of 0.75 millimeter or less
27. Manufacture of sheet-fed and multi-color offset presses (width \geq 750 millimeters; printing speed: single side and multiple color \geq 16,000 sheets per hour, and both sides and multiple color \geq 13,000 sheets per hour)
28. Manufacture of single-width single-paper path web-fed lithographic printing presses with a printing speed of more than 75,000 bisect sheets per hour (787 \times 880 millimeters), double-width single-paper path web-fed lithographic printing presses with a printing speed of more than 170,000 bisect sheets per hour (787 \times 880 millimeters), and commercial web-fed lithographic printing presses with a printing speed of more than 50,000 bisect sheets per hour (787 \times 880 millimeters)
29. Manufacture of multi-color and wide flexographic presses (printing width \geq 1,300 millimeters and printing speed \geq 350 meters per second), inkjet digital printing presses (used for publication: printing speed \geq 150 meters per minute and resolution \geq 600dpi; used for packaging: printing speed \geq 30 meters per minute and resolution \geq 1,000dpi; used for variable data: printing speed \geq 100 meters per minute and resolution \geq 300dpi)
30. Manufacture of systems for ink color computer pre-setting, remote ink color control, water-ink speed tracking, automatic printing quality inspection and tracking, shaftless driving technology; manufacture of high-speed automatic pasters and feeders with a speed of 75,000 sheets per hour, remotely adjustable high-speed folding machines, automatic overprinting systems, cooling devices, silicon-adding systems, and deviation adjustment devices

31. Manufacture of electron-gun automatic coating machines
32. Technology and manufacture of equipment for deep processing of sheet glass
33. Manufacture of integrated new machine models for paper (including pulp) making
34. Manufacture of equipment for new technology for leather post processing
35. Development and manufacture of new agricultural product processing and storage equipment: new equipment for the processing, storage, preservation, grading, packaging and drying of grains, oil bearing materials, vegetables, dried and fresh fruit products, meat products, aquatic products and other products; agricultural product quality inspection instruments and equipment; damage-free quality inspection instruments and equipment for agricultural products; rheometers; farinographs; ultramicro crushing equipment; high-efficiency dehydrating equipment; high-efficiency fruit juice condensation equipment with five or more functions; sterilization equipment for powder food materials; solid and semi-solid food aseptic packaging equipment; and disk-type centrifugal separators
36. Manufacture of agricultural machinery: agricultural facilities and equipment (automatic irrigation equipment for greenhouses, equipment for the automatic disposition of nutrient solutions and fertilization, high-efficiency vegetable seedling equipment and soil nutrient analysis equipment); tractors with an engine power of 120 kilowatts or more and the auxiliary farm implements; diesel engines with low fuel consumption, low noise and low emission; sprayers auxiliary to large tractors and equipped with residual droplets retrieval devices; high-performance rice transplanters; cotton picking machines and cotton picking platforms; self-propelled, (hydraulically or mechanically-driven) corn combined harvesters adaptable to various row spacings; rapeseed harvesters; cane harvesters; and beet harvesters
37. Manufacture of forestry machinery and equipment featuring new technology
38. Manufacture of equipment for collection, bundle and comprehensive utilization of straws and stalks of agricultural crops
39. Manufacture of equipment for utilization of agricultural waste and waste resulting from scale livestock breeding as resources
40. Manufacture of fertilizer-, pesticide- and water-saving, agricultural technology-based equipment
41. Manufacture of equipment for cleaning electromechanical wells and equipment for producing cleaning agents
42. Manufacture of electronic endoscopes
43. Manufacture of fundus cameras
44. Manufacture of key components of medical imaging equipment (including high-field-strength superconducting magnetic resonance imaging equipment, X-ray computed tomography imaging equipment, digital color diagnostic ultrasound equipment, etc.)
45. Manufacture of (3D) ultrasonic transducers for medical use
46. Manufacture of equipment for boron neutron capture therapy (BNCT)
47. Manufacture of image-guided intensity modulated radiation therapy systems
48. Manufacture of haemodialysis machines and hemofiltration machines
49. Manufacture of equipment for fully automated enzyme immunoassay (EIA) systems (with partial functions such as sample loading, enzyme labeling, ELISA plate washing, incubation and data post-processing)
50. New technology and manufacture of new equipment for drug quality control
51. Development and manufacture of new technology for analyzing, and new process and new equipment for extracting, effective substances in natural drugs
52. Manufacture of equipment producing multi-layer co-extrusion water-cooled blown film used for non-PVC medical infusion bags
53. Development and manufacture of new textile machinery, key parts and components, and textile testing and experimental apparatus
54. Manufacture of computer-aided jacquard artificial fur machines
55. Manufacture of specialized equipment for producing solar cells
56. Manufacture of air pollution prevention and control equipment: high-temperature resistant and corrosion-resistant filtering materials, low-NO_x combustion devices, catalyst for flue gas denitrogenation and complete sets of denitrogenation equipment, industrial organic exhaust purification equipment, diesel vehicle exhaust purification equipment, and heavy metal exhaust air treatment equipment
57. Manufacture of water pollution prevention and control equipment: horizontal spiral centrifugal dehydrators, membrane and membrane materials, ozone generators with a capacity of more than 50kg/h, chlorine dioxide generators with a capacity of more than 10 kg/h, ultraviolet disinfection devices, small domestic sewage treatment equipment used in rural areas, and heavy metal waste water treatment equipment
58. Manufacture of solid waste treatment and disposal equipment: sewage plant sludge disposal and resource recycling equipment, complete sets of refuse incineration equipment with a daily treatment capacity of 500 tons or more, landfill leachate treatment technology equipment, anti-seepage geo-membranes in landfills, building waste treatment and resource recovery utilization equipment, devices for disposal of hazardous waste, devices for power generation with biogas in landfills, treatment equipment for ferrous wastes, and soil remediation equipment
59. Development and manufacture of equipment for comprehensive utilization of red mud from aluminum industry
60. Manufacture of equipment for comprehensive utilization of mine tailings
61. Manufacture of equipment for the recycling, disposal and reutilization of used and waste plastics, electrical appliances, rubbers and batteries
62. Manufacture of equipment for recycling waste textiles
63. Manufacture of equipment for remanufacturing of waste mechanical and electrical products
64. Manufacture of devices for the comprehensive utilization of used and waste tires
65. Technology for and manufacture of equipment for environmental protection of aquatic ecosystems
66. Manufacture of portable assembling water purification equipment
67. Unconventional water treatment or recycling equipment and water quality monitoring instruments
68. Leak test equipment and instruments for industrial water pipeline networks and equipment (appliances)
69. Technological development and manufacture of complete sets of equipment for seawater desalination and circulating cooling with daily production capacity of 100,000 cubic meters or more
70. Manufacture of special meteorological observation and analysis equipment

71. Development of systems of seismic stations, networks and mobile seismologic observation technology, and manufacture of corresponding apparatus and equipment
72. Manufacture of radial tire building machine with three or more drums
73. Manufacture of rolling resistance testers and establishment of tire noise testing laboratories
74. Manufacture of new technology equipment for heat supply metering and temperature control devices
75. Manufacture of equipment for hydrogen energy preparation, storage, transportation and inspection systems
76. Manufacture of new heavy residual oil gasification and atomizing nozzles, high-efficiency steam trap valves with a leakage rate of 0.5% or below, and high-temperature ceramic heat exchanger with temperature of 1,000 degrees Celsius or above
77. Manufacture of devices for recovery of marine oil spilling
78. Manufacture of equipment for utilization of low concentration coal-mine gas and methane

(XIX) Transportation Equipment Manufacturing Industry

1. Manufacture of automobile engines and establishment of engine research & development institutions: gasoline engines with power of not less than 70 kilowatts per liter, diesel engines with power of not less than 50 kilowatts per liter and displacement of less than 3 liters, diesel engines with power of not less than 40 kilowatts per liter and displacement of more than 3 liters, and engines using new energy resources such as fuel cells and mixed fuels
2. Manufacture of key automobile parts and components and research & development of key technologies: dual-clutch transmission (DCT), automated mechanical transmission (AMT), gasoline engine turbocharger, viscous coupling (for four-wheel drive), actuator for automatic transmission (electromagnetic valve), hydraulic retarder, eddy current retarder, gas generators for automobile safety air-bags, electronic diesel injection systems, common rail fuel injection technology (with maximum injection pressure of more than 2,000 pa), variable geometry turbocharging (VGT) technology, variable nozzle turbocharging (VNT) technology, engine emission control devices meeting China's Phase V pollutant emission standards, intelligent torque management (ITM) systems and coupler assembly, steer-by-wire systems, diesel particulate trap devices, special-purpose axles for low-floor large buses, energy-absorbing steering system, variable frequency air-conditioning system for large and medium buses, special rubber automobile accessories, and key parts and components of the abovementioned parts and components
3. Manufacture and research & development of automobile electronic devices: electronic control systems and key parts and components of engine and chassis; vehicle electronic technologies (automobile information system and navigation system); automobile electronic bus network technologies (limited to Sino-foreign equity joint venture operations); input (sensor and sampling system) and output (actuator) components of electronic control system; electronic controllers for electric power steering system (limited to Sino-foreign equity joint venture operations); embedded electronic integrated systems (limited to Sino-foreign equity/cooperative joint venture operations); electronically-controlled air springs; electronically-controlled suspension systems; electronic valve system devices; electronic combination instrument; ABS/TCS/ESP systems; Brake-By-Wire (BBW) system; gearbox transmission control unit (TCU); tire-pressure monitoring system (TPMS); on-board diagnostics (OBD); engine anti-theft system; automatic bump-shielded system; and testing systems for automobiles and motorcycles testing and maintenance
4. Manufacture of key parts and components of new energy automobiles: high energy power batteries (energy density $\geq 110\text{Wh/kg}$, cycle life ≥ 2000 times and the proportion of foreign investment of not exceeding 50%), anode materials of batteries (specific capacity $\geq 150\text{mAh/g}$, cycle life of 2000 times with not less than 80% of initial discharge capacity), battery separators (thickness of 15-40 μm , porosity of 40%-60%); battery management systems, motor management systems, and electronic control integration of electric vehicles; driving motors of electric vehicles (peak power density $\geq 2.5\text{kW/kg}$, high-efficiency area: 65%, efficiency in working area $\geq 80\%$), vehicle DC/DC (input voltage of 100V-400V), high-power electronic devices (IGBT, voltage class $\geq 600\text{V}$, current $\geq 300\text{A}$); plug-in hybrid electromechanical coupling drive systems
5. Manufacture of key parts and components for high-emission ($>250\text{ml}$) motorcycles: electronically-controlled fuel injection technology for motorcycles (limited to Sino-foreign equity/cooperative joint venture operations), and engine emission control devices meeting China's Phase III emission standards for motorcycles
6. Rail transportation equipment (limited to Sino-foreign equity/cooperative joint venture operations): research & development, design and manufacture of vehicles and key parts and components (traction drive system, control system and brake system) of transportation equipment for high-speed railway, special lines for railway passenger transportation, intercity railway, trunk railway and urban track transportation; research & development, design and manufacture of services facilities and equipment for high-speed railway, special lines for railway passenger transportation, intercity railway and urban rail transportation; design and research & development of relevant information systems in informationization construction; research & development, design and manufacture of track and bridge facilities for high-speed railway, special lines for railway passenger transportation and intercity railway; research & development, design and manufacture of track transportation signal systems; manufacture of electrified railway equipment and apparatus, railway noise and vibration control technology and research & development thereof, manufacture of waste discharge equipment for railway passenger trains, and manufacture of railway transportation safety monitoring equipment
7. Design, manufacture and maintenance of civil aircrafts: aircrafts for trunk lines and regional aircrafts (with Chinese parties as the controlling shareholders); utility aircrafts (limited to Sino-foreign equity/cooperative joint venture operations)
8. Manufacture and maintenance of civil aircraft parts and components
9. Design and manufacture of civil helicopters: three tons or more (with Chinese parties as the controlling shareholders); less than three tons (limited to Sino-foreign equity/cooperative joint venture operations)
10. Manufacture of civil helicopter parts and components
11. Manufacturing of ground-effect and water-effect aircrafts (with Chinese parties as the controlling shareholders)
12. Design and manufacture of unmanned aircrafts and aerostats (with Chinese parties as the controlling shareholders)
13. Design, manufacture and maintenance of aircraft engines and engine parts and components, and aircraft auxiliary power systems (limited to Sino-foreign equity/cooperative joint venture operations)
14. Design and manufacture of airborne equipment for civil aviation (limited to Sino-foreign equity/cooperative joint venture operations)
15. Manufacture of aviation ground equipment: civil airport facilities, civil airport operation guarantee facilities, ground facilities for flight tests, flight simulation and training equipment, aviation test and measurement equipment, equipment for aviation ground tests, integrated test equipment for airborne equipment, special equipment for aeronautical manufacturing, special

equipment for trial manufacture of aeronautical materials, civil aircraft ground reception and application equipment, carrier rocket ground testing equipment, equipment for carrier rocket mechanics and environmental experiments

16. Manufacture of photoelectric and electromechanical products for spacecrafts, temperature control products for spacecrafts, inspection equipment for satellite-borne products, and spacecraft structure and mechanism products

17. Manufacture of light gas turbines

18. Design of cruise ship and deepwater (3,000 meters or more) marine engineering equipment (limited to Sino-foreign equity/cooperative joint venture operations)

19. Manufacture and repair of marine engineering equipment (including modules) (with Chinese parties as the controlling shareholders)

20. Design of low- and medium-speed diesel engines of vessels and parts and components thereof (limited to Sino-foreign equity/cooperative joint venture operations)

21. Manufacture of low and medium-speed diesel engines of vessels and bent axle (with the Chinese Parties holding majority of the shares)

22. Design and manufacture of cabin machinery of vessels (with the Chinese Parties holding a relative majority of the shares)

23. Design and manufacture of vessel communication and navigation equipment: vessel communication system equipment, vessel electronic navigation equipment, radars for vessel use, electric gyrocompass automatic pilot and vessel's internal broadcasting system, etc.

24. Design and manufacture of yachts (limited to Sino-foreign equity/cooperative joint venture operations)

(XX) Electric Machinery and Equipment Manufacturing Industry

1. Manufacture of key auxiliary equipment used for one million-kilowatt ultra-supercritical thermal power units (limited to Sino-foreign equity/cooperative joint venture operations): safety valves, control valves

2. Manufacture of denitration equipment of sintering machines in coal-fired power plants and steel industry

3. Design and manufacture of seals of thermal power equipment

4. Manufacture of large castings and forgings for coal fired power station and hydro power station equipment

5. Manufacture of key auxiliary equipment for hydro-power generating units

6. Manufacture of power transmission and transformation equipment (limited to Sino-foreign equity/cooperative joint venture operations): amorphous alloy transformers, operating gears for high-voltage switches of 500 kilowatts or more, arc-control devices, large disc insulators (1,000 KV, 50 KA or more), outlet devices, sleeves used for 500 KV or more transformers (500, 750, 1,000 KV AC, all the specifications for DC), voltage regulating switches (on-load, no-load voltage regulating switches of 500, 750, 1,000 KV AC), dry-type smoothing reactors for direct current transmission, and converter valves for ± 800 KV direct current transmission (water coolers, DC field equipment), contact materials for electrical appliances in conformity with EU RoHS Directive, and Pb-free and Cd-free solders

7. Manufacture of complete sets of equipment or key equipment for power generation with new energy resources: equipment for photovoltaic power generation, geothermal power generation, tidal power generation, wave power generation, garbage power generation, biogas power generation, and wind power generation with a capacity of 2.5 megawatts or more

8. Manufacture of large pumped power storage units with rated power of 350MW or more (limited to Sino-foreign equity/cooperative joint venture operations): pump-turbines and speed controllers, large variable speed reversible pump-turbine units, generator-motors and excitation, starters and other ancillary equipment

9. Manufacture of Stirling generator sets

10. Development and manufacture of linear motors and plane motors, and their drive systems

11. Manufacture of high-tech green batteries: nickel-metal hydride (Ni-MH) batteries, nickel-zinc batteries, silver-zinc batteries, lithium-ion batteries, solar batteries, fuel batteries, etc. (excluding new energy vehicle power battery)

12. Manufacture of refrigeration compressors for air conditioning with motor adopting DC speed control technology, refrigeration compressors for air conditioning adopting CO₂ natural refrigerants, refrigeration equipment for air conditioning applying renewable energy (air source, water source, ground source)

13. Manufacture of solar air conditioning and heating systems and solar drying devices

14. Manufacture of biomass drying pyrolysis systems and biomass gasification devices

15. Manufacture of alternating current (AC) variable voltage variable frequency (VVVF) drive devices

(XXI) Telecommunication Equipment, Computer and Other Electronic Equipment Manufacturing Industries

1. Manufacture of HD camcorders and digital sound playing equipment

2. Manufacture of TFT-LCD, PDP, OLED and other panel displays and materials thereof (excluding TFT-LCD glass substrate for the 6th generation and below)

3. Manufacture of key parts for large-screen color projection displays, including optical engines, light sources, projection screens, high-resolution projection tubes and micro-display projection modules

4. Manufacture of digital audio and video coding and decoding equipment; equipment for digital broadcasting and television studios; equipment for digital cable television systems; digital audio broadcasting transmission equipment; digital television up-and-down converters; digital television ground broadcasting single frequency network (SFN) equipment; equipment for satellite digital TV uplink stations; and front-end equipment for satellite master antenna television (SMATV)

5. Design of integrated circuit; manufacture of large-scale digital integrated circuits with a line width of 0.18 microns or less; manufacture of analog or digital-analog integrated circuits with a line width of 0.8 micron or less, MEMS and compound semiconductor integrated circuits; and BGA, PGA, CSP, MCM, and other advanced encapsulation and testing

6. Manufacture of large- and medium-sized electronic computers, high-performance computers with a computing capacity of 100 trillion calculations per second, portable minicomputers, high-class servers with a computing capacity of one trillion calculations or more per second, large analog simulation systems and large industrial controlling machines and controllers

7. Manufacture of computer digital signal processing system and boards

8. Manufacture of graphic and image recognition and processing system

9. Development and manufacture of high-capacity optical and disk drives as well as their components

10. Manufacture of high-speed memory system and intelligent memory device with a capacity of 100TB or more

11. Manufacture of computer-aided design (three-dimensional CAD) systems, computer-aided testing (CAT) systems, computer-aided manufacturing (CAM) systems and computer-aided engineering (CAE) systems and other computer application systems

12. Development and production of software products
 13. Development and manufacture of materials exclusively for electronic purposes (excluding development and manufacture of optical fiber performs)
 14. Manufacture of equipment, testing instruments, tools and molds exclusively for electronic purposes
 15. Manufacture of new electronic parts and components: chip components, sensitive components and sensors, frequency control and selection components, hybrid integrated circuits, power electronic device, optoelectronic devices, new electromechanical components, high molecular solid capacitors, super-capacitors, passive integrated components, high-density interconnect (HDI) boards, flex printed circuit (FPC) boards, rigid-flex printed circuit (R-FPC) boards and packaging boards
 16. Manufacture of touch control system (touch control screens, touch components, etc.)
 17. Manufacture of high-brightness light-emitting diodes (LEDs) with luminous efficiency of more than 1001 m/W, LED epitaxial wafers (blue light) with luminous efficiency of more than 1001 m/W, and white luminous tubes with luminous efficiency of more than 1001m/W and power of more than 200mW
 18. Development and production of key parts of high-density digital disk drive
 19. Production of read-only disks and recordable disks
 20. Design and manufacture of civil satellites (with Chinese parties as the controlling shareholders)
 21. Manufacture of civil satellite payloads (with Chinese parties as the controlling shareholders)
 22. Manufacture of parts and components of civil satellites
 23. Manufacture of equipment for satellite communication systems
 24. Manufacture of satellite navigation and positioning receiving equipment and its components
 25. Manufacture of optical communication measuring instruments, and optical transceivers with a speed of 10 Gb/s or more
 26. Manufacture of ultra-wideband (UWB) communication equipment
 27. Manufacture of wireless local area network (including WAPI support), wide area network equipment
 28. Manufacture of time division multiplex equipment (TDM) with rate of 40Gbps or more, Dense Wavelength Division Multiplexing equipment (DWDM), broadband passive network equipment (including EPON, GPON, WDM-PON, etc.), next-generation DSL silicon and equipment, optical cross connect (OXC) equipment, automatically switched optical network (ASON) equipment, transmission equipment for optical fiber communication at more than 40G/sSDH
 29. Development and manufacture of next generation Internet system equipment, terminal equipment, testing equipment, software, and chips based on IPv6
 30. Development and manufacture of third and subsequent generations of mobile communication cell phones, base stations, core network equipment and network testing equipment
 31. Development and manufacture of high-end routers and network switches of one gigabit or more
 32. Manufacture of equipment for air traffic control systems (limited to Sino-foreign equity/cooperative joint venture operations)
- (XXII) Manufacturing Industries of Instruments and Meters, and Machinery for Cultural and Office Use*
1. Manufacture of industrial process automatic control system and devices: fieldbus control systems, large-scale programmable logic controller (PLC), two-phase flow meters, solid flow meters, new-type sensors and field measuring meters
 2. Development and manufacture of large precision instruments: electron microscopes, laser scanning microscopes, scanning tunneling microscopes, electron probes, large metallographical microscopes, photoelectric direct-reading spectrometers, Raman spectrometers, mass spectrometers, chromatograph-mass spectrometers, nuclear magnetic resonance (NMR) spectrometers, energy spectrometers, X-ray fluorescence spectrometers, diffractometers, industrial computed tomography (CT) scanners, 450KV industrial X-ray diagnostic machines, large dynamic balancing testing machines, online mechanical quantity automatic testing systems, three-coordinate measuring machines, laser comparators, electrical prospecting instruments, airborne electrical and gamma spectrometers at more than 500 meters, borehole gravity and three-component magnetometers, high-precision microgal gravity and airborne gravity gradiometers, grating rulers and encoders
 3. Manufacture of high-precision digital voltmeters and ammeters (with a span of seven and a half bits or more)
 4. Manufacture of reactive power auto-compensation devices
 5. Manufacture of new instruments and equipment for production safety
 6. Manufacture of VXI bus automatic testing systems (in conformity to IEEE1155 international standards)
 7. Development and manufacture of coal mine underground monitoring and hazard forecasting systems, and coal safety testing and management systems
 8. Manufacture of engineering surveying and geophysical observation equipment: digital triangulation systems, numerically controlled three-dimensional terrain model molding systems (area > 1000×1000mm, horizontal error <1mm, and vertical error < 0.5mm), ultra-wide frequency band seismometers (Φ < 5cm, frequency band of 0.01- 50Hz, and equivalent quaking speed noise < 10-9m/s), seismic data integrated processing systems, integrated well seismic and precursor observation systems, precision controlled seismic source systems, engineering acceleration measurement systems, high-precision GPS receivers (precision of 1mm + 1ppm), INSAR image receiving and processing systems, absolute gravimeters with the precision of less than one microgal, satellite gravimeters, Doppler weather radars featuring coherent or dual-polarization technology, visibility meters, meteorological sensors (temperature, air pressure, humidity, wind, precipitation, cloud, visibility, radiation, frozen soil, and snow depth), lightning strike protection systems, multi-level floating dust samplers, 3-D ultrasonic anemoscopes, high-precision intelligent total station instruments, threedimensional laser scanners, high-performance diamond drilling bits, non-cooperative target laser rangefinders, wind profile radars (with RASS), GPS electronic sonde systems, CO₂/H₂O flux observation systems, boundary-layer Doppler laser radars, particle spectrometer for particulate substance (3nm-20 μ m), high-performance data collectors and underwater gliders
 9. Manufacture of environmental monitoring instruments: automatic SO₂ samplers and testers, automatic NO_x and NO₂ samplers and testers, automatic O₃ monitors, automatic CO monitors, flue gas & Pm_{2.5} dust samplers and sample cutters, portable toxic and harmful gas testers, automatic analyzers of organic pollutants in the air, automatic online COD monitors, automatic online BOD monitors, online turbidity monitors, online DO monitors, online TOC monitors, online ammonia nitrogen monitors, radiation dose detectors and ray analysis testers, heavy metal online monitoring equipment, on-line water quality early warning and monitoring equipment adopting biotoxicity method
 10. Manufacture of instruments and equipment for hydrological data collection, processing, and transmission, and for early warnings on flood control

11. Manufacture of instruments and equipment for marine exploration monitoring: middle and deep sea underwater video cameras and cameras, multi-beam detectors, middle and superficial stratum profile detectors, vessel-mounted conductivity-temperature-depth (CTD) probes, fluxgate compasses, hydraulic winches, underwater airtight electronic connectors, energy recovery devices for seawater reverse osmosis desalination (efficiency > 90%), marine ecosystem monitoring buoys, profile detecting buoys, disposable conductivity-temperature-depth (XCTD) probes, on-site water quality measurement instruments, intelligent chemical sensors for seawater quality monitoring and measurement (working for three to six consecutive months), electromagnetic ocean current meters, acoustic Doppler ocean current profilers (self-contained, direct-reading, and vessel-mounted), conductivity-temperature depth (CTD) profilers, acoustic release transponders, and deep-sea oceanic tide measurement systems (laid on the seabed)
12. Manufacture of digital cameras of 10 million pixels or more
13. Manufacture of office machinery: all-in-one multifunction office equipment (printer, copier, fax machine, scanner), color printing devices, heads of high-resolution color printers with precision of 2400dpi or more, OPC drums
14. Manufacture of film machinery: 2K, 4K digital cinema projectors, digital cinema cameras, digital video production, editing equipment

(XXIII) Crafts and Other Manufacturing Industries

1. Development and utilization of clean coal technology and products and manufacture of clean coal equipment (coal gasification, liquefaction, coal water slurry and industrial coal)
2. Coal dressing, and comprehensive utilization of coal ash (including desulfurized gypsum) and coal gangue, etc.
3. Production of completely biodegradable materials
4. Recycling and treatment of waste electrical and electronic products, automobiles, mechanical & electrical equipment, rubbers, metals, batteries

IV. Power, Gas and Water Production and Supply Industries

1. Construction and operation of power stations using the clean combustion technology of integrated gasification combined cycle (IGCC), 300,000-kilowatt or more circulating fluidized bed, and 100,000-kilowatt or more pressurized fluidized bed combination (PFBC) technology
2. Construction and operation of back-pressure combined heat and power stations
3. Construction and operation of hydroelectric power stations with the main purpose of power generation
4. Construction and operation of nuclear power stations (with Chinese parties as the controlling shareholders)
5. Construction and operation of new energy power stations (including, among other things, solar energy, wind energy, geothermal energy, tidal energy, wave energy and biomass energy)
6. Seawater utilization (direct utilization or seawater desalination)
7. Construction and operation of water supply plants
8. Construction and operation of renewable water plants
9. Construction and operation of vehicle charging stations, battery replacement stations

V. Transportation, Storage & Warehousing and Postal Services Industries

1. Construction and operation of trunk railway network (with Chinese parties as the controlling shareholders)
2. Construction and operation of branch railway lines, local railway lines, and related bridges, tunnels, ferries and station facilities (limited to Sino-foreign equity/cooperative joint venture operations)
3. Comprehensive maintenance of infrastructures of high-speed railway lines, passenger railway lines and intercity railways (with Chinese parties as the controlling shareholders)
4. Construction and operation of highways, independent bridges and tunnels
5. Road freight companies
6. Construction and operation of public dock facilities in ports
7. Construction and operation of civil airports (with the Chinese Parties holding a relative majority of the shares)
8. Air transportation companies (with Chinese parties as the controlling shareholders)
9. General airline companies for agriculture, forestry, and fishery (limited to Sino-foreign equity/cooperative joint venture operations)
10. Scheduled or non-scheduled international marine transportation services (with Chinese parties as the controlling shareholders)
11. International container multimodal transportation services
12. Construction and operation of oil (gas) pipelines and oil (gas) depots
13. Construction and operation of coal pipeline transportation facilities
14. Construction and operation of elevated three-dimensional automatic storage facilities, storage & warehousing facilities related to transportation services

VI. Wholesale and Retail Industries

1. Common distribution of common commodities, low-temperature distribution of live and fresh agricultural products and other modern logistics, as well as relevant technological services
2. Rural chain distribution
3. Construction and operation of pallet and container unit sharing system

VII. Leasing and Commercial Services Industries

1. Accounting and auditing (limited to Sino-foreign cooperative joint ventures and partnership ventures)
2. International economic, scientific & technological, environmental protection, and logistics information consulting services
3. Engagement, by way of undertaking outsourced services, in outsourced information technology and business process services, including system application management and maintenance, information technology support management, bank back-office services, financial settlement, human resources services, software development, off-shore call centers and data processing

4. Venture capital enterprises
5. Intellectual property rights services
6. Home oriented service

VIII. Scientific Research, Technological Services and Geological Exploration Industries

1. Bioengineering and biomedical engineering technology, and biomass energy development technology
2. Isotope, radiation and laser technology
3. Marine development and marine energy exploitation technology, technology for comprehensive utilization of marine chemical resources, development and refinement/deep processing of related products, and marine medicine and biochemical product development technology
4. Ocean monitoring technology (ocean tidal waves, weather, environmental monitoring), seabed detection and oceanic resources exploration and assessment technology
5. Technologies of high value-added utilization of seawater chemical resources to comprehensively utilize desalinated dense seawater, including production of salt, extraction of potassium, bromine, magnesium and lithium, and their deep processing
6. Offshore oil pollution cleaning and ecology recovery technology and relevant product development, prevention and treatment technology of sea water eutrophication, prevention and treatment technology of marine life explosive growth disasters, and coastal zone ecological environment recovery technology
7. Energy saving technology development and services
8. Development and application of technologies for recycling and comprehensive utilization of resources, and for recycling emissions and discharges from enterprise productions
9. Environmental pollution control and treatment and monitoring technology
10. New technology for energy efficiency and for the disposal of exhaust gas, waste liquid and waste residue in chemical fiber production and printing and dyeing processing
11. Desertification prevention and desert control and treatment technology
12. Comprehensive management technology for grassland-livestock balance
13. Civil satellite application technology
14. Research and development centers
15. Centers for high and new technology, new product development and enterprise incubation

IX. Water Conservancy, Environmental, and Public Facilities Management Industries

1. Construction and operation of comprehensive water control projects (with Chinese parties as the controlling shareholders)
2. Construction and operation of urban enclosed roads
3. Construction and operation of urban subway, light railway and other track transport (with Chinese parties as the controlling shareholders)
4. Construction and operation of sewage and garbage treatment plants, hazardous waste treatment and disposal plants (incineration plants and landfills), and environmental pollution treatment and control facilities

X. Education

1. Higher educational institutions (limited to Sino-foreign equity/cooperative joint venture operations)
2. Occupational skills training

XI. Health, Social Security and Social Welfare Industries

1. Service institutions for the elderly, the disabled and children

XII. Cultural, Sports and Entertainment Industries

1. Operation of performance venues (with Chinese parties as the controlling shareholders)
2. Operation of stadiums, fitness, contest performance, sports training and intermediary services

Catalogue of Industries in which Foreign Investment is Restricted

I. Agricultural, Forestry, Livestock and Fishery Industries

1. Selection and cultivation of new varieties of crops, and production of seeds (with Chinese parties as the controlling shareholders)
2. Processing of the lumber of precious trees varieties (limited to Sino-foreign equity/cooperative joint venture operations)
3. Processing of cotton (seed cotton)

II. Mining Industry

1. Exploration and mining of special and rare kinds of coal (with Chinese parties as the controlling shareholders)
2. Exploration and mining of barites (limited to Sino-foreign equity/cooperative joint venture operations)
3. Exploration and mining of noble metals (gold, silver and platinum group)
4. Exploration and mining of diamonds, high-aluminum fireclay, wollastonite, graphite and other important nonmetallic mines
5. Mining and mine selection of phosphorus mines, lithium mines and iron sulfur mines, extraction of brine resources from salt lake
6. Mining of szaibelyite and ludwigite
7. Mining of celestite
8. Mining of marine manganese nodule and sea sand (with Chinese parties as the controlling shareholders)

III. Manufacturing Industries

(I) Agricultural Products, Byproducts and Food Processing Industry

1. Processing of edible oils and fats from soybean, rapeseed, peanut, cottonseed, camellia seed, sunflower seed, palm (with Chinese parties as the controlling shareholders), processing of rice, flour, and deep processing of corn
2. Production of biological liquid fuels (fuel ethanol and biodiesel) (with Chinese parties as the controlling shareholders)

(II) Beverage Manufacturing Industry

1. Production of rice wine and famous-brand spirits (with Chinese parties as the controlling shareholders)

(III) Tobacco Products Industry

1. Processing and production of threshed and redried tobacco leaves

(IV) Printing Industry and Reproduction of Recording Media

1. Printing of publications (with Chinese parties as the controlling shareholders)

(V) Petroleum Processing, Coking and Nuclear Fuel Processing Industries

1. Atmospheric and vacuum refinery with an annual output of below 10 million tons, catalytic cracking with an annual output of below 1.5 million tons, continuous reforming (including aromatics extraction) with an annual output of below 1 million tons, hydrogen cracking production with an annual output of below 1.5 million tons

(VI) Manufacturing of Chemical Raw Materials and Chemical Products

1. Production of calcined soda and caustic soda, as well as sulfuric acid, nitric acid and potassium carbonate with limited output or using obsolete process
2. Production of photosensitive materials
3. Production of benzidine
4. Production of precursor chemicals (ephedrine, 3,4-methylenedioxyphenyl-2-propanone, phenylacetic acid, 1-phenyl-2-propanone, piperonal, safrole, iso-safrole and acetic oxide)
5. Production of hydrogen fluoride and other low-end chlorofluorocarbons or chlorofluoro-compounds
6. Production of butadiene rubber (excluding high cis-butadiene rubber), emulsion polymerized styrene butadiene rubber (E-SBR) and thermoplastic styrene-butadiene-styrene (SBS) rubber
7. Production of PVC through acetylene method, and production of ethene of limited output and post-processing products
8. Production of dyes and paints that adopt obsolete process, contain hazardous substances, and are of limited output
9. Processing of ludwigite
10. Production of inorganic salt using large amount of resources and obsolete process and causes serious environment pollution

(VII) Medical and Pharmaceutical Products Manufacturing

1. Production of chloramphenicol, penicillin G, jiemycin, gentamicin, dihydrostreptomycin, amikacin, totomycin, oxytetracycline, mydecamycin, leucomycin (stereomycin), ciprofloxacin, norfloxacin and ofloxacin
2. Production of analgin, paracetamol, Vitamin B1, Vitamin B2, Vitamin C, Vitamin E, multiplex vitamin preparations and oral calcium preparations
3. Production of varieties of vaccines that are under the scope of national immunity planning
4. Production of active pharmaceutical ingredients (APIs) for anesthetics and Category I psychotropic drugs (with Chinese parties as the controlling shareholders)
5. Production of blood products

(VIII) Chemical Fiber Manufacturing

1. Production of chemical fiber drawnwork of conventional copolyester (CoPET)
2. Production of viscose fibers

(IX) Smelting and Rolling of Nonferrous Metals

1. Smelting of rare metals including tungsten, molybdenum, tin (excluding tin compounds) antimony (including antimony oxides and antimony sulphides)
2. Smelting of nonferrous metals including electrolytic aluminum, copper, lead and zinc
3. Smelting and separation of rare earth elements (limited to Sino-foreign equity/cooperative joint venture operations)

(X) General-Purpose Equipment Manufacturing

1. Manufacture of various types of general grade (P0) bearings and their components (steel balls and cages) and roughcasts
2. Manufacture of wheeled, caterpillar hoisting machinery with a lifting capacity of less than 400 tons (limited to Sino-foreign equity/cooperative joint venture operations)

(XI) Specialized Equipment Manufacturing

1. Manufacture of equipment for ordinary dacron filament and short fiber
2. Manufacture of bulldozers of 320 horsepower or less, hydraulic excavators of 30 tons or less, wheeled loaders of 6 tons or less, the graders, road rollers, and forklifts of 220 horsepower or less, electrically driven off-highway dump trucks of 135 tons or less, hydro-mechanically driven off-highway dump trucks of 60 tons or less, asphalt concrete mixing and paving equipment and high altitude operation machinery, garden machinery and tools and ready-mixed concrete machinery (pilot pumps, agitating lorries, mixing stations and pump trucks)

(XII) Manufacturing of Transportation and Communication Equipment

1. Repair, Design and manufacture of vessels (including sections) (with Chinese parties as the controlling shareholders)

(XIII) Manufacturing of Communication Equipment, Computers and Other Electronic Equipment

1. Production of satellite telecasting ground receiving facilities and key components

IV. Industries of Production and Supply of Power, Gas and Water

1. Construction and operation of, in small grids, power plants using coal-fired and steam condensation thermal generator sets with a single generator capacity of 300,000 kilowatts or less, and thermoelectric power stations using coal-fired, steam condensation and extraction thermal generator sets with a single generator capacity of 100,000 kilowatts or less
2. Construction and operation of grids (with Chinese parties as the controlling shareholders)
3. Construction and operation of pipeline networks for gas, heat, water supply and sewage in cities with the population over 0.5 million (with Chinese parties as the controlling shareholders)

V. Transportation, Storage & Warehousing and Postal Services Industries

1. Railway freight transport companies
2. Railway passenger transport companies (with Chinese parties as the controlling shareholders)
3. Highway passenger transport companies
4. Cross-boundary automobile transport companies
5. Water transport companies (with Chinese parties as the controlling shareholders)
6. General aviation companies for photography, prospecting and industrial purposes (with Chinese parties as the controlling shareholders)
7. Telecommunication companies: value-added telecommunication services (with the proportion of foreign investment not exceeding 50%); basic telecommunication services (with the proportion of foreign investment not exceeding 49%)

VI. Wholesale and Retail Industries

1. Direct sales, mail orders, and online sales
2. Purchase of grains; wholesale, retail, and distribution of grains, cotton, vegetable oil, sugar, tobacco, crude oil, agricultural chemicals, agricultural plastic film and fertilizers (in the case of chain stores with more than 30 stores established and selling products of different varieties and brands from multiple suppliers, the Chinese parties shall be the controlling shareholders)
3. Construction and operation of large-scale agricultural products wholesale market
4. Distribution of audio-video products (excluding movies) (limited to Sino-foreign cooperative joint venture operations)
5. Vessel agencies (with Chinese parties as the controlling shareholders) and ocean shipping tally companies (limited to Sino-foreign equity/cooperative joint venture operations)
6. Wholesale of product oil, and construction and operation of gas stations (in the case of those with 30 chain gas stations established and funded by the same foreign investors and selling product oil of different varieties and brands from multiple suppliers, the Chinese parties shall be the controlling shareholders)

VII. Finance Industry

1. Banks, financial companies, trust companies, and currency brokerage companies
2. Insurance companies (in the case of life insurance companies, the proportion of foreign investment shall not exceed 50%)
3. Securities companies (limited to underwriting of A Shares, underwriting and transaction of B Shares, H Shares, and government and corporate bonds, with the proportion of foreign investment not exceeding one third), and securities investment fund management companies (with the proportion of foreign investment not exceeding 49%)
4. Insurance brokerage companies
5. Futures companies (with Chinese parties as the controlling shareholders)

VIII. Real Estate Industry

1. Development of tracts of land (limited to Sino-foreign equity/cooperative joint venture operations)
2. Construction and operation of high-class hotels, high-class office buildings and international exhibition centers
3. Real estate secondary market transactions and real estate intermediary or brokerage companies

IX. Leasing and Commercial Services Industries

1. Legal consulting
2. Market surveys (limited to Sino-foreign equity/cooperative joint venture operations)
3. Credit investigation and rating service companies

X. Scientific Research, Technological Services and Geological Exploration Industries

1. Surveying and mapping companies (with Chinese parties as the controlling shareholders)
2. Import and export goods inspection, appraisal and certification companies
3. Photography services (including aerial photography and other stunt photography services but excluding aerial photography for survey and mapping purposes; limited to Sino-foreign equity joint venture operations)

XI. Education

1. Ordinary senior high schools (limited to Sino-foreign cooperative joint venture operations)

XII. Cultural, Sports and Entertainment Industries

1. Production of radio and television programs and movies (limited to Sino-foreign cooperative joint venture operations)
2. Construction and operation of movie theaters (with Chinese parties as the controlling shareholders)
3. Construction and operation of large theme parks
4. Performance brokerage agencies (with Chinese parties as the controlling shareholders)
5. Operation of recreational venues (limited to Sino-foreign equity/cooperative joint venture operations)

XIII. Other Industries Restricted by the State or by the International Treaties that China has Concluded or Acceded to

Catalogue of Industries in Which Foreign Investment is Prohibited

I. Agricultural, Forestry, Livestock and Fishery Industries

1. Research and development, breeding and planting of China's rare and special varieties, and production of relevant breeding materials (including quality genes in planting industry, husbandry and aquaculture)
2. Research and development of transgenic organism, and production of transgenic crop seeds, breeding livestock and poultry, and aquatic larvae
3. Fishing in the ocean area and inland waters under China's jurisdiction

II. Mining Industry

1. Exploration and mining of tungsten, molybdenum, tin, stibonium and fluorite
2. Exploration, mining and selection of rare earth elements
3. Exploration, mining and selection of radioactive minerals

III. Manufacturing Industries

(I) Beverage Manufacturing Industry

1. Processing of green tea and special tea with Chinese traditional techniques (including famous tea and dark tea)

(II) Medical and Pharmaceutical Products Manufacturing Industry

1. Processing of traditional Chinese medicinal materials listed in the "Regulations for Protection of Wild Medicinal Resources" and the "Catalogue of China's Rare, Precious and Endangered Plants under Protection"
2. Application of processing techniques including steaming, stir-frying, moxibustion, and calcination for making ready-to-use pieces of traditional Chinese medicines; and production of traditional Chinese secret prescription medicines

(III) Nonferrous Metals Smelting and Rolling Industry

1. Smelting and processing of radioactive minerals

(IV) Specialized Equipment Manufacturing Industry

1. Manufacturing of Weapons and Ammunition

(V) Electric Machinery and Equipment Manufacturing Industry

1. Manufacture of open (i.e., acid mist directly coming out) lead-acid batteries, mercury-contained silver oxide button batteries, mercury-contained alkaline zinc-manganese button batteries, pasted zinc-manganese batteries and nickel-cadmium batteries

(VI) Industrial Products and Other Manufacturing Industries

1. Ivory carving
2. Tiger bone processing
3. Production of bodiless lacquerware
4. Production of enamel products
5. Production of Xuan paper and Chinese ink ingot
6. Production of carcinogenic, teratogenic and mutagenesis products and persistent organic pollutants

IV. Power, Gas and Water Production and Supply Industries

1. Construction and operation of, outside small grids, power plants using coal-fired and steam condensation thermal generator sets with a single generator capacity of 300,000 kilowatts or less, and thermoelectric power stations using coal-fired, steam condensation and extraction thermal generator sets with a single generator capacity of 100,000 kilowatts or less

V. Transportation, Storage & Warehousing and Postal Services Industries

1. Air traffic control companies
2. Postal companies; domestic express mails delivery business

VI. Leasing and Commercial Service Industries

1. Social surveys

VII. Scientific Research, Technological Services and Geological Exploration Industries

1. Development and application of human stem cell and genetic diagnosis and treatment technology
2. Geodetic surveying, marine charting, aerial photography for surveying and mapping purposes, administrative boundary surveying and mapping, topographic map compilations and general map compilations, and compilations of electronic maps for navigation purposes

VIII. Water Conservancy, Environmental, and Public Facilities Management Industries

1. Construction and operation of natural reserves and internationally important wetlands
2. Development of wild animal and plant resources originated in and protected by China

IX. Education

1. Compulsory education institutions, education institutions in military affairs, police, politics and other special fields, and Party schools

X. Cultural, Sports and Entertainment Industries

1. News agencies
2. Publishing of books, newspapers, and periodicals
3. Publishing and production of audio-video products and electronic publications
4. All radio stations, television stations, radio and television channels (frequencies), radio and television transmission and coverage networks (transmitting stations, relay stations, radio and television satellites, satellite uplink stations, satellite receiving and transmitting stations, microwave stations, monitoring stations, and cable radio and television transmission and coverage networks)
5. Radio and television program production and operating companies

6. Movie production companies, distribution, and theater companies
7. Provision of news websites, online audio and video programs, operation of business premises for Internet-access services, and operation of Internet cultural business (excluding music)
8. Construction and operation of golf courses and villas
9. Gambling and lottery industry (including horse race tracks for gambling purposes)
10. Pornography industry

XI. Other Industries

1. Projects endangering the safety and performance of military facilities

XII. Other Industries Prohibited by the State or by International Treaties China has Concluded or Acceded to

Notes:

1. *If there are other provisions in the Mainland and Hong Kong Closer Economic Partnership Arrangement and its supplements, the Mainland and Macau Closer Economic Partnership Arrangement and its supplements, the Cross-strait Economic Cooperation Framework Agreement and its supplements, and the free trade zone agreements concluded and signed by and between China and other relevant countries, such provisions shall prevail.*
2. *If there are other provisions in the special regulations or industry policies of the State Council, such provisions shall prevail.*