

**National Development and Reform Commission of
The People's Republic of China
And
Ministry of Commerce of the People's Republic of China**

Decree No.12

The *Guideline Catalogue of Industries for Foreign Investment (Amended 2011)* has already been approved by the State Council, and is hereby promulgated and shall be put into force commencing from 30 January 2012. As from the same date, the *Guideline Catalogue of Industries for Foreign Investment (Amended 2007)*, which was promulgated by the National Development and Reform Commission and the Ministry of Commerce on 31 October 2007, shall cease to be implemented.

Chairman of the National Development and Reform Commission: Zhang Ping
Minister of Commerce: Chen Deming

24 December 2011

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<http://www.ndrc.gov.cn/zcfb/zcfbl/2011ling/W020111229379511927834.pdf>

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Guideline Catalogue of Industries for Foreign Investment

(Amended 2011)

CATALOGUE OF ENCOURAGED FOREIGN INVESTMENT INDUSTRIES

I Agriculture, forestry, animal husbandry and fishery industries

1. Plantation, exploitation and manufacture of woody edible oil crops, spices and industrial raw materials
2. Technological development in the cultivation of green and organic vegetables (including edible mushrooms and melons), dried and fresh fruits, and tea, and the relevant production
3. Development of new cultivation technologies of sugar crops, fruit trees and forage grass, etc., and the relevant production
4. Production of flowers and construction and operation of nursery bases
5. Plantation of rubber trees, oil palms, sisal hemp and coffee
6. Plantation and cultivation of traditional Chinese medical herbs (only in the form of equity joint ventures and cooperative joint ventures)
7. Application into farmlands and comprehensive utilization of stalks of farm crops, development and production of organic manure resources
8. Plantation of timber or bamboo forests, and development of improved varieties, and cultivation of new varieties of polyploid trees
9. Cultivation of aquatic larvae (excluding China's rare and endemic species)
10. Construction and operation of ecological environment protection projects with regard to plantation of trees and grass for prevention and control of desertification and soil erosion
11. Aqua farming, deep-water cage aquaculture, industrial aquaculture and ecological marine aquaculture

II Mining industries

1. Prospecting and development of coal bed gas and utilization of mine gas (only in the form of equity joint ventures and cooperative joint ventures)
2. Risk exploration and development of petroleum and natural gas (only in the form of equity joint ventures and cooperative joint ventures)
3. Development of low permeability hydrocarbon reservoirs (fields) (only in the form of equity joint ventures and cooperative joint ventures)
4. Enhancement of the recovery ratio of crude oil and development and application of relevant new (only in the form of equity joint ventures and cooperative joint ventures)
5. Development and application of new technology of oil exploration and development for geophysical prospecting, drilling, logging, underground operation, etc. (only in the form of

- equity joint ventures and cooperative joint ventures)
- 6. Exploration and development of unconventional oil resources such as oil shale, oil sand, heavy oil and extra heavy oil (only in the form of equity joint ventures and cooperative joint ventures)
- 7. Prospecting, exploitation and dressing of iron ores and manganese ores
- 8. Development and application of new technology to increase the using rate of mine tailings and comprehensive application of technology for ecological restoration of mines
- 9. Exploration and exploitation of unconventional natural gas resources such as shale gas and submarine gas hydrate (only in the form of equity joint ventures and cooperative joint ventures)

III Manufacturing industries

1. Agricultural and subsidiary food processing industry
 - (1) Development and manufacture of biological fodder, straw fodder and aquatic feed
 - (2) Processing of aquatic products, cleaning and processing of shellfish, development of seaweed health food
 - (3) Processing of vegetables, dry and fresh fruits, poultry and livestock products
2. Food manufacturing industry
 - (1) Development and manufacture of baby food, aged people food and health food
 - (2) Development and manufacture of forest food
 - (3) Manufacture of natural food additives and food ingredients
3. Beverage manufacturing industry
 - (1) Development and manufacture of beverages including fruit and vegetable juices, protein beverages, tea and coffee, plant beverages
4. Tobacco products industry
 - (1) Processing of cellulose diacetate and tow (only in the form of equity joint ventures and cooperative joint ventures)
5. Textile industry
 - (1) Manufacture of lightweight and high performance industrial textiles that are high/low temperature resistant, chemical resistant, and with good light fastness, which are produced using non-woven, weaving, knitting or their composite techniques
 - (2) Weaving, dyeing, post-handling and processing of high-grade textiles using advanced energy saving and emission reduction technologies and equipments

- (3) Processing of products of special natural fibers (including special animal fibers such as cashmere wool and silk, as well as hemp fibers, cocoon silk, colored cotton, etc.) that comply with the requirements on ecological and comprehensive resource utilization and environmental protection
 - (4) Clothing manufacture with computer integrated manufacturing system
 - (5) Manufacture of functional, ecological and special purpose clothing
 - (6) Manufacture of high-grade carpet, embroidery and drawn work products
6. Leather, pelage, feather (cashmere) and production thereof industry
 - (1) Clean technological processing of leather and fur
 - (2) Post-decorating and new technological processing of leather
 - (3) Processing of high-grade leather
 - (4) Comprehensive utilization of leather waste
7. Wood processing and wood, bamboo, cane, palm, straw manufacturing industries
 - (1) Development and manufacture of new technology and new products for the comprehensive utilization of three residual of forestry, “substandard, small and firewood” timber and bamboo materials
8. Papermaking and paper products industries
 - (1) Single production lines mainly utilizing overseas timber resources for chemical wood pulp with an annual production capacity of 300,000 tonnes or more, and single production lines for chemi-mechanical wood pulp with an annual production capacity of 100,000 tonnes or more, and the production line for high-grade papers and paperboards built simultaneously (only in the form of equity joint ventures and cooperative joint ventures)
9. Petroleum processing, coking industries and nuclear fuel processing
 - (1) Deep processing of needle-form coke and coal tar
10. Chemical raw materials and chemical products manufacturing industries
 - (1) Development and production of new downstream products of sodium calcium hypochlorite, polyvinyl chloride (PVC) and organosilicon
 - (2) Manufacture of complementary raw materials for synthetic materials: production of hydrogen peroxide-based propylene oxide, epoxy chloropropane by using glycerol method, naphthalene dicarboxylate (NDC), 1,4-Cyclohexanedimethanol (CHDM)
 - (3) Manufacture of raw materials for synthetic fibers: caprolactam, nylon 66 salt, melt-spinning spandex resin and 1,3-propylene glycol
 - (4) Manufacture of synthetic rubber: liquid butadiene-styrene rubber (excluding

thermoplastic styrene butadiene rubber), high cis butadiene rubber, butyl rubber, isovalerye rubber, polyurethane rubber, acrylate rubber, epichlorohydrin rubber, ethylene propylene rubber, fluorine rubber and silicon rubber and other special rubbers

- (5) Manufacture of 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 chemical industries: new products and new technology for catalytic agents, commercialized processing techniques for dyes (pigments), manufacture of chemical products for electronic and paper-making purposes, food additives, animal fodder additives, chemical products for leather products (excluding N-N dimethylformamide), oil field assisting products, surface active agents, water treatment agents, adhesives, inorganic fibers, manufacture of inorganic nanometer materials and deep processing of surface coating of pigments
- (7) Manufacture of environmental protection type printing ink and aromatic hydrocarbon oil
- (8) Manufacture of natural perfume, synthetic perfume and mono-isolate perfume
- (9) Manufacture of high-performance coating materials, water-borne coatings for automobiles and matching water-borne resin
- (10) Manufacture of substitution of chlorofluorocarbon
- (11) Manufacture of high-performance fluororesin, fluorine coating materials, medical intermediates containing fluorine, environment-friendly refrigerant and detergent
- (12) Manufacture of recycling fluorine resources from phosphorous chemistry and aluminum smelting
- (13) Development and manufacture of new technology and new products of chemical products for forest industry
- (14) Development and manufacture of inorganic, organic and biological films for environmental protection purposes
- (15) Development and manufacture of new type fertilizer: biological fertilizers, high concentration potash, compound fertilizers, slow-release controllable fertilizers, compound microbial inoculants, complex microbial fertilizers, straws and dosage of garbage maturation, special functional microbial preparation
- (16) Development and manufacture of new varieties, new formulations, special-purpose intermediates, or auxiliary agents of efficient, safe and environment-friendly agricultural chemicals, and development and application of relevant clean production process (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 manufacture of biological pesticide and biological control products: microbial insecticides, microbial fungicides, agricultural antibiotics, insect

- pheromones, natural enemy insects and microbial herbicide
- (18) Comprehensive utilization and treatment of exhaust gas, waste liquids and waste residue
- (19) Manufacture of organic polymer materials: aircraft skin coating, red dyes of rare earth, lead-free system in electronic packaging materials, special series of photolithography size for color plasma display pane, superfine fibre with tiny diameter and high specific surface area, high-precision fuel filter paper, and membrane in lithium-ion battery

11. Medical and pharmaceutical manufacturing industries

- (1) Manufacture of new pharmaceutical compounds or active component drugs (including raw medicine and preparation)
- (2) Manufacture of amino acids: tryptophan by using zymotechnics process, histidine, methionine used in feeds, etc
- (3) Manufacture of new anti-carcinogens, new cardio-cerebro-vascular medicines and new drugs for nervous system
- (4) Manufacture of new types of drugs using bioengineering and biotechnology
- (5) Manufacture of HIV/AIDS vaccines, Hepatitis C vaccines, contraceptive vaccines and new vaccines for cervical cancer, malaria and hand, foot, and mouth disease
- (6) Manufacture of biological vaccines
- (7) Development and manufacture of maritime medicines
- (8) Manufacture of manufactured pharmaceutical products: new types of pharmaceutical products and new products which use new technology slow-releasing, controlled releasing, target treatment, absorption treatment
- (9) Development and manufacture of new medical adjuvants
- (10) Manufacture of antibacterial agents specifically for animal use (including antibiotics and chemical compounds)
- (11) Manufacture of new products and new-type preparations of antiseptic, anthelmintic, insecticides and anti-coccidium for animal use
- (12) Manufacture of new diagnostic reagents

12. Chemical fibres manufacturing industry

- (1) Manufacture of high-tech chemical fibers (excluding viscose fibers), including differential chemical fibers, aramid fibers, carbon fibers, high-performance/high modulus polyethylene fibers and polyphenylene sulfide (PPS) fibers
- (2) Manufacture 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) Manufacture of biomass fiber with renewable new resources and green technology, including solvent spun cellulose fibres (Lyocell), regenerated cellulose fibres using bamboo, hemp etc, poly lactic acid (PLA) fibers, chitin fibre,

- polyhydroxyalkanoates (PHA) fibers, animal and plant protein fibers etc.
- (4) Manufacture of polyamide with single line daily production capacity of 150 tonnes or above
 - (5) Manufacture of aramid fibre and cord for meridian tyre

13. Plastic manufacturing industry

- (1) Development and manufacture of new photo-ecological, multiple-functional, wide width agricultural films
- (2) Resolution and reuse of plastic waste
- (3) Development and manufacture of new technology and new products for soft package plastics (high-obstruct, multi-functional membrane and raw materials)

14. Non-metallic manufacturing industry

- (1) Development and manufacture of building materials characterized by energy conservation, environmental protection, waste recycling, light-weight, high-strength, high performance, and multiple functions
- (2) Manufacture of energy-saving and effective chemical building materials with plastic instead of steel, plastic instead of wood
- (3) Manufacture 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 of which the width is two meters or longer, and relevant auxiliary materials; wide polyvinyl chloride (PVC) waterproof rolls of which the width is two meters or longer; and thermoplastic polyolefin (TPO) waterproof rolls
- (4) Development and manufacture of functional glass using new technologies: electromagnetic wave shielding glass; glass substrate for microelectronic use; infrared transmitting lead-free glass; electronic-grade large-scale quartz glass products (such as pipe, plate, copple, instruments and utensils); multiple-functional windshield glass with excellent optical performance; extreme materials and products for use in information technologies (including quartz glass bushing and ceramic wafer for waveguide-grade, high-precise optical fiber preform rod); purification processing of raw materials for high pure ($\geq 99.998\%$) or ultrapure ($\geq 99.999\%$) crystal
- (5) Manufacture of conductive glass for thin film batteries and glass for solar illuminator
- (6) Manufacture of glass fiber products and special glass fibers: low dielectric glass fibers, quartz glass fibers, high silica glass fibers, high strength and high elastic glass fibers, ceramic fiber etc. and their products
- (7) Manufacture 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) Standardised refinement of ceramic raw material and the manufacture of high-grade

- decorative materials for use in ceramic
- (9) Manufacture of environment-friendly (non-chromizing) refractory materials used in furnaces, including cement, electronic glass, ceramics, and microporous carbon bricks
 - (10) Manufacture of aluminum nitride (AlN) ceramic substrates and porous ceramics
 - (11) Manufacture of new inorganic and nonmetallic materials and products: composite materials, special ceramics, special sealing materials (including high-speed oil-seal materials), special binding materials, special latex materials, underwater acoustic rubber products, and nanophase materials
 - (12) Manufacture of organic-inorganic composite cellular insulation materials
 - (13) Manufacture of high-tech composite materials: continuous fiber reinforced thermoplastic composite materials and preregs, 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 parts of vehicle), special-function composite materials and their products (including composite material products used in deep water or for diving, composite materials products for medical treatment and recuperation), carbon or carbon composite materials, high-performance ceramic-based composite materials and their products, metal or glass-based composite materials and products, metal-layered composite materials and their products, ultra high pressure composite rubber hoses (pressure $\geq 320\text{MPa}$) and large passenger aircraft tires
 - (14) Manufacture of high-precision and performance ceramics raw materials: Silicon Carbide (SiC) superfine powder (purity $>99\%$, average diameter of powder $<1\ \mu\text{m}$), Silicon Nitride (Si₃N₄) superfine powder (purity $>99\%$, average powder diameter $<1\ \mu\text{m}$), high purity superfine powder of Aluminum Oxide (purity $>99.9\%$, average diameter of powder $<0.5\ \mu\text{m}$), low temperature sintered Zirconium Oxide powder (sintering temperature $<1350^\circ\text{C}$), high purity Aluminum Nitride (AlN) powder (purity $>99\%$, average diameter of powder $<1\ \mu\text{m}$), rutile TiO₂ powder (purity $>98.5\%$), Silica (powder diameter $<100\text{nm}$), Barium Titanate (purity $>99\%$, average diameter of powder $<1\ \mu\text{m}$)
 - (15) Development and manufacture of high-quality artificial crystals and thin-film transistor products: 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 the thickness of not more than 0.3mm
 - (16) Fine processing of non-metallic minerals (ultra-fine crushing, high purification, refinement, modification)
 - (17) Manufacture of ultra-high power graphite electrode
 - (18) Manufacture of pearly mica (particle diameter 3-150 μm)
 - (19) Manufacture of integrated fabrics with multi-dimension and multi-direction and shaped fabrics

- (20) Harmless disposition 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

15. Non-ferrous metallurgy and rolling processing industries

- (1) Manufacture of silicon single crystal and polishing wafers with diameter of 200mm and above
- (2) Manufacture of non ferrous metal materials with high and new technology: compound semiconductor materials (GaAs, GaP, IP, GaN), high temperature super conducting materials, memory alloy materials (titanium-nickel, Cu-based and Fe-based memory alloys) , superfine (nanometer) Calcium Carbide and superfine (nanometer) crystalline cemented carbide, superhard composite, composite materials of precious metal, aluminum foil for radiator, medium-high voltage cathode aluminum capacitor foils, special large-scale aluminum alloy profiles, high-precision mould casting of aluminum alloy, electrification of railways overhead line, ultra-thin copper strip, corrosion resistance heat exchanger copper alloy materials, high-performance copper nickel, copper ferroalloy strip, Be-Cu strip, thread, pipe and rode processing materials, high temperature resistance and anti-senescence tungsten wire, magnesium alloy casting, lead-free solder, magnesium alloy and its application products, foamed aluminum, titanium alloy strip and welding of Ti pipe, sponge zirconium of atomic energy level, deep-processing products of tungsten and molybdenum

16. Metalwork manufacturing industry

- (1) Research, development, and manufacture of new light-weight and environment-friendly materials for aviation, aerospace, automobiles and motorcycles (including special-purpose aluminum sheets, aluminum-magnesium alloy materials and aluminum alloy motorcycle frames)
- (2) Development and manufacture of hardware for construction, hot-water heating equipment and the hardware parts thereof
- (3) Manufacture and processing (including printing and coating processing of internal and external surface) of metal packaging products for various kinds of cereal and oil food, fruits and vegetable, beverage and daily chemical products, etc (thickness below 0.3mm)
- (4) Manufacture of nickel-saving stainless steel products

17. General equipment manufacturing industry

- (1) Manufacture of high-grade numerical control 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 equipment for dismantling, crushing, and post-processing and sorting of retired automobiles
 - (4) Manufacture of Flexible Transfer Line (FTL)
 - (5) Manufacture of vertical multi-joint industrial robot, welding robot and its welding machine
 - (6) Manufacture of special processing machinery: laser cutting and welding whole set of equipment , laser high-precision processing machine, numerical control low-speed wire-cut EDM, submicron superfine milling machine
 - (7) Manufacture of wheel or track hoisting machine at 400 tonnes and above (only in the form of equity joint ventures and cooperative joint ventures)
 - (8) Design and manufacture of high-pressure plunger pumps of working pressure $\geq 35\text{MPa}$ and engines, and low-speed large-torque engines of working pressure $\geq 35\text{MPa}$
 - (9) Manufacture of integrated hydraulic-pressure multiple unit valve of working pressure $\geq 25\text{MPa}$, 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 hydraulic driving system
 - (12) Development and manufacture of non-contact gas film seal with pressure of 10MPa and above, dry gas seal with pressure of 10MPa and above (including experiment devices)
 - (13) Development and manufacture of polymer materials (friction disk, remodel of phenolic piston and non-metallic hydraulic master and wheel cylinder, 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 (where the processing centers have more than three axis alignment function and 3-4 μm 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 fire resistant insulating materials (with insulating levels of F and H) and insulated molding parts
- (18) Development and manufacture of accumulator bladders, and rubber and plastic seals for hydropneumatic use
- (19) Manufacture of high-precision, high-strength (at the level of 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

18. Special equipment manufacturing industry

- (1) Manufacture of mining equipment for trackless exploration, carrying and transportation: mining auto-unloading vehicle with capacity of 200 tonnes or above, mobile crusher, bucket wheel excavator with efficiency of 5000 cubic meter per hour or above, mining loader with capacity of 8 cubic meter or above, coal excavating equipment with power beyond 2500KW etc.
- (2) Manufacture for geophysical prospecting and logging equipment: MEME geophone, digital telemetering seismometer, digital imaging and computerized logging system, horizontal well, directional well, drilling devices and apparatus and measuring while drilling (MWD) system.
- (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 construction of concrete cut off wall used in bank against flood.
- (8) Manufacture of construction machinery for underwater earthwork: bulldozers, loaders and excavators, etc. used in water below depth of 9 meter
- (9) Manufacture of equipment for maintenance and automatic testing of roads and bridges

- (10) Manufacture of operational monitoring, ventilation, disaster prevention and rescue equipment for 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 environmental protection, energy saving, field spraying, heat insulation and waterproof roof with polyurethane foam system, technique and equipment for polyurethane sealant, preparing technique and manufacturing equipment for modified silicone sealing ointment.
- (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 the 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 large-scale coal chemistry set equipment (only in the form of equity joint ventures and cooperative joint ventures)
- (18) Design, manufacture and repair of metallic product mould (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 non-metallic molds
- (23) Manufacture of beer irrigating equipment with efficiency of 60,000 bottles per hour or above, medium temperature or hot beverage irrigating equipment with efficiency of 50,000 bottles per hour or above, asepsis irrigating equipment with efficiency of 36,000 bottles per hour or above.
- (24) Manufacture techniques of amino acids, enzymatic preparations and food additives and manufacture of key equipment in connection therewith
- (25) Manufacture of whole sets of equipment for forage processing with a production capacity of 10 tonnes per hour or above and key parts thereof
- (26) Manufacture of light corrugated paperboard with ridge height of 0.75mm and below and paper box equipment
- (27) Manufacture of sheet-fed and multi-color offset presses (width ≥ 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 image single sheet rolling paper lithographic printing machine with printing speed of above 75,000 bisect sheet per hour ($787 \times 880\text{mm}$), double images single sheet rolling paper lithographic printing machine with printing speed of above 170,000 bisect sheet per hour ($787 \times 880\text{mm}$), commercial rolling paper lithographic printing machine with printing speed of above 50,000 bisect sheet per hour ($787 \times 880\text{mm}$)
 - (29) Manufacture of multi-color and wide flexographic presses (printing width $\geq 1,300$ millimeters and printing speed ≥ 350 meters per second), inkjet digital printing presses (used for publication: printing speed ≥ 150 meters per minute and resolution $\geq 600\text{dpi}$; used for packaging: printing speed ≥ 30 meters per minute and resolution $\geq 1,000\text{dpi}$; used for variable data: printing speed ≥ 100 meters per minute and resolution $\geq 300\text{dpi}$)
 - (30) Manufacture of computer mass color preset, mass color remote control, wash printing velocity tracking system, automatic inspection and tracking system for the printing quality, shaft-less drive technology, high-speed automatic paper receiver, paper supplier and remote controlled folding machine with speed of 75,000 sheet per hour, automatic overprinting system, cooling system, silicon adding system and offset compensator etc.
 - (31) Manufacture of electron-gun automatic coating machines
 - (32) Technology for, and manufacture of equipment for, sheet glass deep processing
 - (33) Manufacture of new types of whole sets of papermaking equipment (including paper pulp)
 - (34) Manufacture of new technological equipment for leather post-finishing
 - (35) Development and manufacture of new equipment for processing and storage of agricultural products: new processing and storage, preservation, classification, packaging and drying equipment for grain, oil, vegetable, dry and fresh fruits, meat products, aquatic products, etc, quality testing instruments and equipment for agricultural products, non-invasive testing instrument for the quality of farm product, rheometer, farinograph, ultra-micro crushing equipment, high-efficiency dehydration equipment, high efficiency (five effect or above) juice concentration equipment, sterilization equipment for powder food material, asepsis packaging equipment for solid and semi-solid food, dish type separation centrifuger.
 - (36) Manufacture of farming machine : equipment for factory farming (automatic irrigating equipment used in glasshouse, nutrition fluid automatic configuration and fertilization equipment, high efficiency vegetable seeding equipment, analyzing equipment for the nutrient of the earth), tractor and the related farm implement with the engine's power of more than 120KW, low oil cost, low noise and low emission diesel engine, sprayer of matched with large scale tractor and with reclaim system for the residual particles, high performance rice transplanter, cotton picking machine and cotton picking equipment, self-moving corn combine reaping machine suitable to multi-row spacing (driven by hydraulic pressure or machine) , rapeseed harvesters; cane harvesters; and beet harvesters
 - (37) Manufacture of new technological equipment for forestry usage

- (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 as resources and of waste resulting from scale livestock breeding as resources
- (40) Manufacture of agricultural technological equipment for saving of fertilizer, pesticide and water
- (41) Manufacture of electro-mechanical well cleaning equipment and cleaning devices specific for drug-making equipment
- (42) Manufacture of electronic endoscopes
- (43) Manufacture of fundus camera
- (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 ultrasonic transducers in medicine (3D)
- (46) Manufacture of boron neutron capture therapy equipment
- (47) Manufacture of image-guided intensity modulated radiation therapy systems
- (48) Manufacture of haemodialysis machines and hemofiltration machines
- (49) Manufacture of fully automated ELISA system equipment (with such functions as sample loading, enzyme labeling, plate washing, incubation, data post-processing, etc.)
- (50) Manufacture of new technologies and equipment for quality control of drugs
- (51) Development and manufacture of new technology for analyzing, new process for extracting, and new equipment for, effect substance in natural drugs
- (52) Manufacture of multi-layer co-extrusion water-cooled blown film equipment for non-PVC medical infusion bags
- (53) Development and manufacture of new types of textile machinery, key spare parts and instruments for weaving testing and experiment apparatus
- (54) Manufacture of electronic jacquard pile knitting machine
- (55) Manufacture of equipment specially 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 wastewater 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 recycling and regeneration equipment for waste plastics, electrical apparatus, rubber and battery
 - (62) Manufacture of reclamation equipment for 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) Seawater desalination and cycle cooling technique with daily production of 100,000 cubic meters or above and development and manufacture of set equipment
 - (70) Manufacture of special meteorological observation and analysis equipment
 - (71) Manufacture of seismic station, seismic network and development of flexible seismological observation technology system and instruments and equipment
 - (72) Manufacture of tri-drum and above radial tyre forming machine
 - (73) Manufacture of rolling resistance testing machine and tyre noise testing room
 - (74) Manufacture of new technological equipment for heat metering and temperature control device
 - (75) Manufacture of hydrogen energy preparation, storage and transportation equipment and inspection system
 - (76) Manufacture of new heavy residual oil gasifying and atomizing nozzle, high-efficiency steam draining valve with gas linkage rate at 0.5% or below and high temperature ceramic heat exchanger at 1000°C or above
 - (77) Manufacture of devices for recovery of marine oil spilling
 - (78) Manufacture of equipment for utilization of low concentration of coal-mine gas and methane

19. 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 (>250ml) 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) Equipment for rail traffic transportation (only in the form of equity joint ventures and cooperative joint ventures): research and development, design and manufacture of complete vehicle and key spare parts (traction and drive system, control system and braking system) of transportation equipment for high speed railway, dedicated-passenger railway lines, intercity railroad, trunk railway and urban rail traffic; research and development, design and manufacture of passenger service facility and equipment for high speed railway, dedicated-passenger railway lines, intercity railroad and urban rail traffic, design and research and development of relative information system in information construction; R&D, design and manufacture of rail and bridge equipment for express railways, passenger-dedicated railway lines and inter-city railroads, research and development, design and manufacture of communication signal system for rail traffic transportation, manufacture of equipment and appliance of electrified railway, technology and research and development for control noise and vibration of railway, manufacture of pollution discharge equipment for railway passenger cars, manufacture of safety monitoring equipment for railway transportation
- (7) Design, manufacture and maintenance of civilian aircrafts: main line and regional aircraft (the Chinese party holds the controlling interest), utility aircraft (only in the form of equity joint ventures and cooperative joint ventures)
- (8) Manufacture and maintenance of spare parts of civilian aircrafts
- (9) Design and manufacture of civilian helicopters: 3 tonnes and above (the Chinese party holds the controlling interest); below 3 tonnes (only in the form of equity joint ventures and cooperative joint ventures)
- (10) Manufacture of spare parts for civilian helicopters
- (11) Manufacture of ground or water surface effect aircraft (the Chinese party holds the controlling interest)
- (12) Design and manufacture of unmanned aerial vehicle and aerostat (the Chinese party holds the controlling interest)
- (13) Design, manufacture and maintenance of aero-engines and its spare parts, aerial auxiliary power system (only in the form of equity joint ventures and cooperative joint ventures)
- (14) Design and manufacture of civilian aircraft air-borne equipment (only in the form of equity joint ventures and cooperative joint ventures)
- (15) Manufacture of aeronautic ground equipment: civil airport facilities, operational and protective equipment for civil airport, ground equipment for flight test, equipment for flight simulation and training, equipment for aero test and measure, ground test equipment, comprehensive test devices for airborne equipment, specialized equipment for aeronautic manufacture, specialized equipment for trial manufacture of aeronautic material, ground reception and application equipment for civil spacecraft, ground test equipment for carrier rocket, mechanic and environmental test equipment for carrier rocket
- (16) Manufacture of optical-electromechanical products, temperature control products,

- testing equipment for satellite-related product and structure and organ for spacecraft
- (17) Manufacture of light-duty gas turbines
- (18) Design of cruise ship and deepwater (3,000 meters or more) marine engineering equipment (only in the form of equity joint ventures and cooperative joint ventures)
- (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 (only in the form of equity joint ventures and cooperative joint ventures)
- (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 ship's communication and navigational equipment: communication system equipment, electronic navigational equipment, radar for ship use, gyro compass automatic rudder, and public broadcasting system inside the ship, etc.
- (24) Design and manufacture of yachts (only in the form of equity joint ventures and cooperative joint ventures)

20. Electronic and mechanical equipment manufacturing industries

- (1) Manufacture of key auxiliary equipment used for one million-kilowatt ultra-supercritical thermal power units (only in the form of equity joint ventures and cooperative joint ventures): 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 (only in the form of equity joint ventures and cooperative joint ventures): 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 the capacity of 2.5 megawatts or more

- (8) Manufacture of large pumped power storage units with rated power of 350MW or more (only in the form of equity joint ventures and cooperative joint ventures): 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 motor, planar motor and its driving system
- (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

21. Communication 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 1st generation through the 6th generation)
- (3) Manufacture of key components for large-screen color projection monitor such as optical engine, light source, projection screen, high-definition projection tube and micro displaying projection modulus
- (4) Manufacture of digital audio and video encoding and decoding equipment, digital radio and television studio equipment, digital cable television system equipment, digital audio broadcasting radiation equipment, digital television up-down transformer, digital television broadcasting on the earth single frequency network (SFN) equipment, satellite digital television uplink workstation equipment and (SMATV) front terminal equipment
- (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 computers, manufacture of high-performance computer with computing speed of one hundred thousand billion per second or

- above, manufacture of portable computers, manufacture of high-grade servers with computing speed of one thousand billion or above, manufacture of large scale simulation system and large size industrial controlling machine or controller
- (7) Manufacture of computer digital signal processing system and the integrated circuit board
 - (8) Manufacture of graph and image recognition and processing system
 - (9) Development and manufacture of large-capacity compact disk drives and magnetic disk drives and parts thereof
 - (10) Manufacture of high speed storage system with capacity more than 100tb and manufacture of equipment for intelligent storage
 - (11) Manufacture of computer-aided design (3-dimensional CAD), computer-aided testing (CAT), computer-aided manufacturing (CAM) and computer-aided engineering (CAE) systems and other computer application systems
 - (12) Development of manufacture of software products
 - (13) Development and manufacture of materials specially used in electronic
 - (14) Manufacture of special-purpose electronic equipment, testing apparatuses, tools and moulds
 - (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 manufacture of key parts of high-density digital CD-ROMs
 - (19) Replication of read-only compact disks and manufacture of recordable compact disks
 - (20) Design and manufacture of civil satellites (the Chinese party shall be the holding party)
 - (21) Manufacture of effective loads of civil satellites (the Chinese party shall be the holding party)
 - (22) Manufacture of spare parts for civil satellites
 - (23) Manufacture of equipment of satellite communication system
 - (24) Manufacture of satellite navigation, positioning and receiving equipment and key parts thereof
 - (25) Manufacture of measuring instrument for optical communication and manufacture of optical transceiver with speed of 10Gb/s and above
 - (26) Manufacture of equipment for UWB communication
 - (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) Manufacture of the third-generation and subsequent mobile communication system phones, base station, core network equipment, development and manufacture of network monitoring equipment
- (31) Development and manufacture of high-end routers and network switches each with a capacity of one Gigabit or above
- (32) Manufacture of equipment for air traffic control systems (only in the form of equity joint ventures and cooperative joint ventures)

22. Instruments and meters, and cultural and office machinery

- (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 voltmeter and amperemeter (with displaying measuring range of seven position and a half)
- (4) Manufacture of automatic compensation instrument for the dynamical reactive power
- (5) Manufacture of new instruments and equipment for production safety
- (6) Manufacture of the automatic test system of VXI bus (in compliance with IEEE 1155 international standard)
- (7) Development and manufacture of monitoring system network in colliery and disaster prediction system, safety management integrated management system in colliery

- (8) Manufacture of the equipment in engineering measurement and geophysical observation: digital triangulation measurement system, numerical control forming system for modeling in the 3d terrain (with area of more than $1000 \times 1000\text{mm}$, horizontal error less than 1mm, vertical error less than 0.5mm), super wideband seismometer (with $\phi < 5\text{cm}$, frequency band: 0.01-50hz, equivalent ground motion velocity noise $< 10^{-9}\text{m/s}$), seismic data processing system, integrated underground earthquake precursor observation system, precise vibroseis system, engineering acceleration measurement system, high precision GPS receiver (with the precision of $1\text{mm}+1\text{ppm}$), INSAR image receiving and processing system, absolute gravimeter with the precision of less than 1 micro-ga, satellite gravimeter, polarimetric measurements of dual-polarization radar, visibility meter, meteorological sensor (temperature, pressure, humidity, wind, rainfall, cloud, visibility, radiation, frozen soil, snow depth), lighting stroke prevention system, multiple level floating dust sampling meter, 3-D ultrasonic anemometer, high precision intelligentized total station, 3d laser scanner, high performance diamond drill, laser range finder without cooperation target, wind profile instrument (including RASS), gps digital direction finder system, $\text{CO}_2/\text{H}_2\text{O}$ flux observation system, boundary multi-layer doppler ladar, particle by-spectrum instrument ($3\text{nm}-20 \mu\text{m}$), high performance data collector, underwater glider
- (9) Manufacture of environmental monitoring instruments: automatic SO_2 samplers and testers, automatic NOX and NO_2 samplers and testers, automatic O_3 monitors, automatic CO monitors, flue gas & $\text{Pm}_{2.5}$ 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 devices and equipment for hydrological data collecting, processing and transmitting and flood pre-warning
- (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 10 million pixels or more digital cameras

- (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

23. Crafts and other manufacturing industries

- (1) Development, utilization and equipment manufacture of clean coal technological products (gas coal, liquefied coal, water-coal and industrial coal), of clean coal technologies
- (2) Comprehensive utilization of coal washing, powered coal (including sweet plaster), gangue, etc.
- (3) Manufacture of full-biodegradation materials
- (4) Recycling and treatment of waste electrical and electronic products, automobiles, mechanical and electrical equipment, rubbers, metals, batteries

IV Power, gas and water production and supplying industries

- 1. Construction and operation of power stations using clean combustion technologies by adoption of Integrated Gasification Combined Cycle (IGCC), circulating fluidized bed with 300,000 kilowatt and above, Pressurized Fluidized Bed Combustion (PFBC) with 100,000 kilowatt and above.
- 2. Construction and operation of back-pressure type cogeneration power plants
- 3. Construction and operation of hydro-power plants with power generation as a major activity
- 4. Construction and operation of nuclear power plants (the Chinese Party holds the controlling interest)
- 5. Construction and operation of power plants consuming new types of energy (including solar energy, wind energy, geothermal energy, tidal wave energy, wave energy and biomass energy, etc.)
- 6. Utilization of seawater (direct utilization of seawater, desalination of seawater)
- 7. Construction and operation of water plants
- 8. Construction and operation of renewable water plants
- 9. Construction and operation of vehicle charging stations, battery replacement stations

V Transportation, storage and post industries

- 1. Construction and operation of arterial railway networks (the Chinese party holds the controlling interest)
- 2. Construction and operation of branch railways, local railways and bridges, tunnels, ferries and stations/depots thereof (only in the form of equity joint ventures and cooperative joint

- ventures)
3. Comprehensive services for basic facilities of high speed railways, passenger dedicated lines and intercity railways (the Chinese party holds the controlling interest)
 4. Construction and operation of roads, independent bridges and tunnels
 5. Road freight transportation companies
 6. Construction and operation of port and wharf facilities for public use
 7. Construction and operation of airports for civil aviation use (the Chinese party holds the controlling interest, relatively speaking)
 8. Air transportation companies (the Chinese party holds the controlling interest)
 9. Air transportation companies for general use in agriculture, forestry and fishery (only in the form of equity joint ventures and cooperative joint ventures)
 10. Regular or irregular international maritime transportation services (the Chinese party holds the controlling interest)
 11. International multi-modal container transportation services
 12. Construction and operation of petroleum (gas) pipelines and petroleum (gas) depots
 13. Construction and operation of coal pipeline transportation facilities
 14. Construction and operation of warehousing facilities in connection with transportation services Construction and operation of elevated three-dimensional automatic storage facilities, storage and warehousing facilities related to transportation services

VI Wholesale and retail industries

1. Common distribution of general 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 Lease and commercial service industries

1. Accounting and auditing (only in the form of cooperative joint ventures or partnership)
2. International economic, scientific, technological, environmental and logistics information consulting services
3. Information technology services and business process outsourcing services by carrying on outsourcing services of management and maintenance of system application, information technology support and management, banking background services, financial settlement, human resource services, software development, off-shore call center, data treatment, etc.
4. Venture capital companies
5. Intellectual property rights services
6. Home service

VIII Scientific research, technological service and geological prospecting industries

1. Bio-engineering and biomedicine engineering technologies, biomass energy development technologies
2. Isotope, radiation and laser technologies
3. Ocean exploitation and ocean energy development technologies, technologies of comprehensive utilization of ocean chemical resources, technologies of development and intensive processing of related products, oceanic medicine and biochemical product development technologies
4. Ocean monitoring technologies (ocean tide, weather and environment monitoring), seabed prospecting and ocean energy survey and evaluation technologies
5. Technology of high-added-value utilization of chemical energy of seawater by comprehensive utilization of condensed seawater after desalted for extraction of salt, potassium, bromine, magnesium, lithium and intensive processing
6. Offshore oil pollution clean-up 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 disaster, and coastal area ecological environment recovery technology
7. Energy saving technology development and services
8. Technologies for regeneration and comprehensive utilization of resources, development and application of technologies for recycling of emissions as a result of enterprise production activities
9. Environmental pollutant treatment and monitoring technologies
10. New technology for energy saving and emission reduction in chemical fiber production and printing and dyeing processing and for the disposal of exhaust gas, waste liquid and waste residue
11. Technology of desertification prevention and desert harnessing
12. Comprehensive management technology for balance between animal and grassland
13. Technology for application of civil satellites
14. Research and development centers
15. Centers for development of new and high technologies and new products and incubation of enterprises

IX Water conservancy, environment and public facilities management industries

1. Construction and operation of multiple-purpose hydro-junctions (the Chinese party holds the controlling interest)
2. Construction and operation of urban enclosed roads
3. Construction and operation of such rail transportation as urban underground, light rail system, etc. (the Chinese party holds the controlling interest)
4. Construction and operation of sewage and refuse disposal plants, dangerous wastes disposal and treatment plants (incineration plants, dumping plants) and environmental pollution treatment facilities

X Education industry

1. Higher education institutions (only in the form of equity joint ventures or cooperative joint ventures)
2. Vocational skills training

XI Health, social security and social welfare industries

1. Service institutions for the elderly, the disabled and children
2. Vocational skills training

XII Culture, sports and entertainment industries

1. Operation of performance locales (the Chinese party holds the controlling interest)
2. Operation of gymnasium, fitness, competitive performance, sports training and intermediary services

CATALOGUE OF RESTRICTED FOREIGN INVESTMENT INDUSTRIES

I Agriculture, forestry, animal husbandry and fishery industries

1. Selection and cultivation of new variety of crops, manufacture of seeds (the Chinese party holds the controlling interest)
2. Processing of logs of precious tree species (only in the form of equity joint ventures or cooperative joint ventures)
3. Processing of cotton (seed cotton)

II Mining industry

1. Exploration and exploitation of special or rare types of coal (the Chinese holds the controlling interest)
2. Exploration and exploitation of barite (only in the form of equity joint ventures or cooperative joint ventures)
3. Exploration and exploitation of noble metals (gold, silver and platinum class)
4. Exploration and mining of diamonds, high-aluminum fireclay, wollastonite, graphite and other important nonmetallic metals
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. Exploitation of celestite
8. Exploitation of ocean manganese nodules and sea sand (the Chinese Party holds the controlling interest)

III Manufacturing industries

1. Agricultural products and supplementary food processing industry
 - (1) Processing of edible oils and fats from soybean, rapeseed, peanut, cottonseed, camellia seed, sunflower seed, palm (the Chinese party holds the controlling interest), processing of rice, flour, and deep processing of corn
 - (2) Manufacture of biological liquid fuel (fuel ethanol, biodiesel) (the Chinese party holds the controlling interest)
2. Beverage manufacturing industry
 - (1) Manufacture of millet wine and well known spirits
3. Tobacco production industry

- (1) Processing and Manufacture of threshing re-dry tobacco leaf
4. Printing and record media duplication industries
 - (1) Printing of publications (the Chinese party holds the controlling interest)
5. Petroleum Processing, Coking and Nuclear Fuel Processing Industries
 - (1) Atmospheric and vacuum refinery with the annual output below 10 million tons, the catalytic cracking with the annual output below 1.5 million tons, the continuous reforming (including aromatics extraction) with the annual output below 1 million tons, the hydrogen cracking production with the annual output below 1.5 million tons
6. Chemical raw materials and chemical products production industries
 - (1) Production of calcined soda and caustic soda, as well as sulfuric acid, nitric acid and potassium carbonate of limited output or with obsolete process
 - (2) Production of light-sensitive materials
 - (3) Production of benzidine
 - (4) Production of chemicals easily convertible into poisons (ephedrine, 3/4-subunit phenyldioxy-2-acetone, benzene acetic acid, 1-pheny-2-acetone, piperonal, safrole, isosafrole, acetic anhydride)
 - (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 ores
 - (10) Production of inorganic salt which occupies large amount of resources, causes serious environment pollution, and adopts obsolete process
7. Medical and pharmaceutical production industries
 - (1) Production of chloramphenicol, penicillin G, lincomycin, gentamycin, dihydrostreptomycin, amikacin, tetracycline hydrochloride, terramycin, midecamycin, leucomycin, ciprofloxacin, norfloxacin and ofloxacin.
 - (2) Production of analgin, paracetamol, vitamin B1, vitamin B2, Vitamin C, vitamin E, compound vitamin preparations and oral calcium preparations

- (3) Production of varieties of vaccines which have been incorporated into the national immunity planning
- (4) Production of raw substances of narcotic drugs and the first class of psychotropic drugs (the Chinese party holds the controlling interest)
- (5) Production of blood products

8 Chemical fibers manufacturing industry

- (1) Manufacture of drawn-out threads of chemical fibers for chips spinning
- (2) Manufacture of viscose fibers

9 Non-ferrous metallurgy and rolling processing industries

- (1) Metallurgy of rare metals, such as tungsten, molybdenum, stannum (excluding stannum compounds) and antimony (including antimony oxide and antimony sulfide), etc.
- (2) Metallurgy of non-ferrous by electrolysis of aluminium, copper, plumbum and zinc, etc.
- (3) Smelting and separation of rare earth (only in the form of equity joint ventures or cooperative joint ventures)

10 General equipment manufacturing industry

- (1) Manufacture of each class of bearings of conventional grade (P0) and parts thereof (steel ball, retaining frame), manufacture of semi-finished products
- (2) Manufacture of wheeled or tracked hoisting machines of up to 400 tons (only in the form of equity joint ventures and cooperative joint ventures)

11 Equipment for Special Purposes manufacturing industry

- (1) Manufacture of equipment for producing long dacron threads and chopped fibers
- (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)

12 Equipment for traffic and transportation industry

- (1) Repair, design and manufacture of vessels (including the subsection, and the Chinese party holds the controlling interest)

13 Equipment for communication, computer and other electronic industry

- (1) Manufacture of satellite television and radio ground receivers and key parts thereof

IV Electricity, gas and water producing & supplying industries

1. Construction and management of coal-fired and steam-condensed power plants whose single-machine capacity is less than 300,000 KW, coal-fired and steam-condensed with steam extraction power plants combined with heat and power generation unit whose single-machine capacity is less than 100,000 KW within little power network range
2. Construction and management of the power network (the Chinese party holds the controlling interest)
3. Construction and operation of pipeline networks for gas, heat, water supply and sewage in cities with the population over 0.5 million (the Chinese party holds the controlling interest)

V Transportation, warehouse management, post & telecommunications industries

1. Railway freight transportation companies
2. Railway passenger transportation companies (the Chinese party holds the controlling interest)
3. Highway passenger transportation companies
4. Entry and exit motor vehicle transportation companies
5. Water transportation companies (the Chinese party holds the controlling interest)
6. General aviation companies for photographing, ore prospecting and other industrial purposes (the Chinese party holds the controlling interest)
7. Telecommunications companies: value-added telecommunications services (the foreign investment shall not exceed 50% of the total investment), fundamental telecommunications services (the foreign investment shall not exceed 49% of the total investment)

VI Wholesale and retail industries

1. Direct sales, mail orders, and sales online
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 having established more than 30 stores and selling products of different varieties and brands from multiple suppliers, the Chinese party holds the controlling interest)
3. Construction and operation of large-scale agricultural products wholesale market
4. Distribution of audio-video products (excluding movies) (only in the form of cooperative joint ventures)
5. Ship factorage (the Chinese party holds the controlling interest) and foreign ship tallying

- (only in the form of equity joint ventures and cooperative joint ventures)
6. Wholesaling of finished oil products and construction and operation of gas stations (the Chinese party holds the controlling interest in a franchised gas station that has set up more than 30 branches, established all by the same foreign investor, selling different kinds of finished oil products under different brands from different suppliers).

VII Finance industry

1. Banks, financial companies, trust companies, and money brokerage companies
2. Insurance companies (the proportion of the foreign capital in any life insurance company should not be more than 50%)
3. Securities companies (limited to underwriting of A share, underwriting and dealing of B share, H share and bond of the government and the companies, the proportion of the foreign capital should not be more than 1/3), securities investment and fund management companies (the proportion of the foreign capital should not be more than 49%)
4. Insurance brokerage companies
5. Futures companies (the Chinese party holds the controlling interest)

VIII Real estate industry

1. Development of land tracts (only in the form of equity joint ventures and cooperative joint ventures)
2. Construction and operation of high-end hotels, high-class office towers, and international exhibition and exhibition centers
3. The second level market exchange, agency or broker companies of the real estate

IX Tenancy or business service industries

1. Legal consultation
2. Market research (only in the form of equity joint ventures and cooperative joint ventures)
3. Companies of credit investigation and ranking service

X Scientific research, technological services and geological exploration industries

1. Surveying and mapping companies (the Chinese party holds the controlling interest)
2. Inspection, appraisal and certification of import and export commodities
3. Photographing service (including trick photography service such as aerial photography but excluding aerial photography for mapping, only in the form of equity joint ventures)

XI Education industry

1. Common high schools (only in the form of cooperative joint ventures)

XII Culture, sport and entertainment industries

1. Production of radio and television programs and movies (only in the form of cooperative joint venture)
2. Construction and operation of cinemas (the Chinese party holds the controlling interest)
3. Construction and operation of large theme parks
4. Broker companies for performance (the Chinese party holds the controlling interest)
5. Operation of the entertainment place (only in the form of equity joint ventures and cooperative joint ventures)

XIII Other industries restricted by the State or International Treaties that China has concluded or taken part in

CATALOGUE OF PROHIBITED FOREIGN INVESTMENT INDUSTRIES

I Agriculture, forestry, animal husbandry and fishery industries

1. Research and development, breeding and plantation 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 fingerlings
3. Fishing in sea areas under China's jurisdiction and in China's inland waters

II Mining and quarrying industry

1. Prospecting and exploitation of tungsten, molybdenum, stannum, antimony and fluorite
2. Prospecting, exploitation and dressing of rare earth
3. Prospecting, exploitation and dressing of radioactive minerals

III Manufacturing industries

1. Drink manufacturing industry
 - (1) Processing of green tea and special types of tea by use of China's traditional techniques (prestigious tea, dark tea, etc.)
2. Medical and pharmaceutical industry
 - (1) Processing of traditional Chinese medicines listed in *Regulations on Conservation and Protection of Wild Chinese Medicinal Material Resources* and in *List on Protection of Rare and Endangered Plants in China*
 - (2) Application of such processing techniques as steaming, stir-frying, moxibustion, and calcination for making small pieces of ready-for-use traditional Chinese medicines; and production of traditional Chinese patent medicine of secret prescriptions
3. Nonferrous metals smelting and pressing industries
 - (1) Smelting and processing of radioactive minerals

4. Manufacturing Industry for special use
 - (1) Manufacturing of weapons and ammunition
5. Electric machines 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
6. Industrial product and other manufacturing Industries
 - (1) Ivory carving
 - (2) Tiger-bone processing
 - (3) Production of bodiless lacquerware
 - (4) Production of enamel products
 - (5) Production of rice paper and making of ink ingots
 - (6) Production of carcinogenic, teratogenic, and mutagenetic products and persistent organic pollutants

IV Electric power, gas and water producing & supplying industries

1. Construction and management of coal-fired and steam-condensed power plants whose single-machine capacity is less than 300,000 KW, coal-fired and steam-condensed with steam extraction power plants combined with heat and power generation unit whose single-machine capacity is less than 100,000 KW outside little power network range

V Transportation, warehouse management, and post & communications industries

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

VI Tenancy or business service industries

1. Social survey

VII Scientific research, technological services and geological exploration industries

1. Development and application of human stem cells, genetic diagnose and treatment technique
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, environment and public facility management industries

1. Construction and operation of natural reserves and important wetland in international
2. Development of wild animal and plant resources original in China protected by the State

IX Education industry

1. Compulsory education institutions, education institutions for special domains (e.g. military service, police, politics and party schools)

X Culture, sport and entertainment industries

1. Press organs
2. Publication of books, newspapers and periodicals
3. Publication and preparation of audio and video products and electronic publications
4. Radio broadcast stations, television stations, radio and television channels, and radio and television transmitting and covering networks (transmitting stations, re-broadcasting stations, radio and television satellites, satellite uplink stations, satellite receiving and transmitting stations, micro-wave stations, monitoring platforms, wire broadcasting and cable television transmitting and covering networks) at various levels
5. Publishing and playing companies of broadcasting and TV programs
6. Film production companies, film distribution companies and theatres
7. Management of news websites, online video and audio program service, online internet service for business location and internet culture (excluding music)
8. Construction and operation of golf field and villas
9. Gambling industry (including race courses for gambling purpose)
10. Pornographic industry

XI Other industries

1. Projects that endanger the safety and service performance of military facilities

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

Notes:

- i. 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.
- ii. If there are any other provisions in the special regulations or industry policies of the State Council, such provisions shall prevail.