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国务院关于印发《中国制造2025》的通知

国发〔2015〕28号

各省、自治区、直辖市人民政府，国务院各部委、各直属机构：

现将《中国制造2025》印发给你们，请认真贯彻执行。

国务院

2015年5月8日

（本文有删减）

中国制造2025

制造业是国民经济的主体，是立国之本、兴国之器、强国之基。十八世纪中叶开启工业文明以来，世界强国的兴衰史和中华民族的奋斗史一再证明，没有强大的制造业，就没有国家和民族的强盛。打造具有国际竞争力的制造业，是我国提升综合国力、保障国家安全、建设世界强国的必由之路。

新中国成立尤其是改革开放以来，我国制造业持续快速发展，建成了门类齐全、独立完整的产业体系，有力推动工业化和现代化进程，显著增强综合国力，支撑我世界大国地位。然而，与世界先进水平相比，我国制造业仍然大而不强，在自主创新能力、资源利用效率、产业结构水平、信息化程度、质量效益等方面差距明显，转型升级和跨越发展的任务紧迫而艰巨。

当前，新一轮科技革命和产业变革与我国加快转变经济发展方式形成历史性交汇，国际产业分工格局正在重塑。必须紧紧抓住这一重大历史机遇，按照“四个全面”战略布局要求，实施制造强国战略，加强统筹规划和前瞻部署，力争通过三个十年的努力，到新中国成立一百年时，把我国建设成为引领世界制造业发展的制造强国，为实现中华民族伟大复兴的中国梦打下坚实基础。

《中国制造2025》，是我国实施制造强国战略第一个十年的行动纲领。

一、发展形势和环境

（一）全球制造业格局面临重大调整。

新一代信息技术与制造业深度融合，正在引发影响深远的产业变革，形成新的生产方式、产业形态、商业模式和经济增长点。各国都在加大科技创新力度，推动三维（3D）打印、移动互联网、云计算、大数据、生物工程、新能源、新材料等领域取得新突破。基于信息物理系统的智能装备、智能工厂等智能制造正在引领制造方式变革；网络众包、协同设计、大规模个性化定制、精准供应链管理、全生命周期管理、电子商务等正在重塑产业价值链体系；可穿戴智能产品、智能家电、智能汽车等智能终端产品不断拓展制造业新领域。我国制造业转型升级、创新发展迎来重大机遇。

全球产业竞争格局正在发生重大调整，我国在新一轮发展中面临巨大挑战。国际金融危机发生后，发达国家纷纷实施“再工业化”战略，重塑制造业竞争新优势，加速推进新一轮全球贸易投资新格局。一些发展中国家也在加快谋划和布局，积极参与全球产业再分工，承接产业及资本转移，拓展国际市场空间。我国制造业面临发达国家和其他发展中国家“双向挤压”的严峻挑战，必须放眼全球，加紧战略部署，着眼建设制造强国，固本培元，化挑战为机遇，抢占制造业新一轮竞争制高点。

（二）我国经济发展环境发生重大变化。

随着新型工业化、信息化、城镇化、农业现代化同步推进，超大规模内需潜力不断释放，为我国制造业发展提供了广阔空间。各行业新的装备需求、人民群众新的消费需求、社会管理和公共服务新的民生需求、国防建设新的安全需求，都要求制造业在重大技术装备创新、消费品质量和安全、公共服务设施设备供给和国防装备保障等方面迅速提升水平和能力。全面深化改革和进一步扩大开放，将不断激发制造业发展活力和创造力，促进制造业转型升级。

我国经济发展进入新常态，制造业发展面临新挑战。资源和环境约束不断强化，劳动力等生产要素成本不断上升，投资和出口增速明显放缓，主要依靠资源要素投入、规模扩张的粗放发展模式难以为继，调整结构、转型升级、提质增效刻不容缓。形成经济增长新动力，塑造国际竞争新优势，重点在制造业，难点在制造业，出路也在制造业。

（三）建设制造强国任务艰巨而紧迫。

经过几十年的快速发展，我国制造业规模跃居世界第一位，建立起门类齐全、独立完整的制造体系，成为支撑我国经济社会发展的重要基石和促进世界经济发展的重要力量。持续的技术创新，大大提高了我国制造业的综合竞争力。载人航天、载人深潜、大型飞机、北斗卫星导航、超级计算机、高铁装备、百万千瓦级发电装备、万米深海石油钻探设备等一批重大技术装备取得突破，形成了若干具有国际竞争力的优势产业和骨干企业，我国已具备了建设工业强国的基础和条件。

但我国仍处于工业化进程中，与先进国家相比还有较大差距。制造业大而不强，自主创新能力弱，关键核心技术与高端装备对外依存度高，以企业为主体的制造业创新体系不完善；产品档次不高，缺乏世界知名品牌；资源能源利用效率低，环境污染问题较为突出；产业结构不合理，高端装备制造业和生产性服务业发展滞后；信息化水平不高，与工业化融合深度不够；产业国际化程度不高，企业全球化经营能力不足。推进制造强国建设，必须着力解决以上问题。

建设制造强国，必须紧紧抓住当前难得的战略机遇，积极应对挑战，加强统筹规划，突出创新驱动，制定特殊政策，发挥制度优势，动员全社会力量奋力拼搏，更多依靠中国装备、依托中国品牌，实现中国制造向中国创造的转变，中国速度向中国质量的转变，中国产品向中国品牌的转变，完成中国制造由大变强的战略任务。

二、战略方针和目标

（一）指导思想。

全面贯彻党的十八大和十八届二中、三中、四中全会精神，坚持走中国特色新型工业化道路，以促进制造业创新发展为主题，以提质增效为中心，以加快新一代信息技术与制造业深度融合为主线，以推进智能制造为主攻方向，以满足经济社会发展和国防建设对重大技术装备的需求为目标，强化工业基础能力，提高综合集成水平，完善多层次多类型人才培养体系，促进产业转型升级，培育有中国特色的制造文化，实现制造业由大变强的历史跨越。基本方针是：

——创新驱动。坚持把创新摆在制造业发展全局的核心位置，完善有利于创新的制度环境，推动跨领域跨行业协同创新，突破一批重点领域关键共性技术，促进制造业数字化网络化智能化，走创新驱动的发展道路。

——质量为先。坚持把质量作为建设制造强国的生命线，强化企业质量主体责任，加强质量技术攻关、自主品牌培育。建设法规标准体系、质量监管体系、先进质量文化，营造诚信经营的市场环境，走以质取胜的发展道路。

——绿色发展。坚持把可持续发展作为建设制造强国的重要着力点，加强节能环保技术、工艺、装备推广应用，全面推行清洁生产。发展循环经济，提高资源回收利用效率，构建绿色制造体系，走生态文明的发展道路。

——结构优化。坚持把结构调整作为建设制造强国的关键环节，大力发展先进制造业，改造提升传统产业，推动生产型制造向服务型制造转变。优化产业空间布局，培育一批具有核心竞争力的产业集群和企业群体，走提质增效的发展道路。

——人才为本。坚持把人才作为建设制造强国的根本，建立健全科学合理的选人、用人、育人机制，加快培养制造业发展急需的专业技术人才、经营管理人才、技能人才。营造大众创业、万众创新的氛围，建设一支素质优良、结构合理的制造业人才队伍，走人才引领的发展道路。

（二）基本原则。

市场主导，政府引导。全面深化改革，充分发挥市场在资源配置中的决定性作用，强化企业主体地位，激发企业活力和创造力。积极转变政府职能，加强战略研究和规划引导，完善相关支持政策，为企业发展创造良好环境。

立足当前，着眼长远。针对制约制造业发展的瓶颈和薄弱环节，加快转型升级和提质增效，切实提高制造业的核心竞争力和可持续发展能力。准确把握新一轮科技革命和产业变革趋势，加强战略谋划和前瞻部署，扎扎实实打基础，在未来竞争中占据制高点。

整体推进，重点突破。坚持制造业发展全国一盘棋和分类指导相结合，统筹规划，合理布局，明确创新发展方向，促进军民融合深度发展，加快推动制造业整体水平提升。围绕经济社会发展和国家安全重大需求，整合资源，突出重点，实施若干重大工程，实现率先突破。

自主发展，开放合作。在关系国计民生和产业安全的基础性、战略性、全局性领域，着力掌握关键核心技术，完善产业链条，形成自主发展能力。继续扩大开放，积极利用全球资源和市场，加强产业全球布局和国际交流合作，形成新的比较优势，提升制造业开放发展水平。

（三）战略目标。

立足国情，立足现实，力争通过“三步走”实现制造强国的战略目标。

第一步：力争用十年时间，迈入制造强国行列。

到2020年，基本实现工业化，制造业大国地位进一步巩固，制造业信息化水平大幅提升。掌握一批重点领域关键核心技术，优势领域竞争力进一步增强，产品质量有较大提高。制造业数字化、网络化、智能化取得明显进展。重点行业单位工业增加值能耗、物耗及污染物排放明显下降。

到2025年，制造业整体素质大幅提升，创新能力显著增强，全员劳动生产率明显提高，两化（工业化和信息化）融合迈上新台阶。重点行业单位工业增加值能耗、物耗及污染物排放达到世界先进水平。形成一批具有较强国际竞争力的跨国公司和产业集群，在全球产业分工和价值链中的地位明显提升。

第二步：到2035年，我国制造业整体达到世界制造强国阵营中等水平。创新能力大幅提升，重点领域发展取得重大突破，整体竞争力明显增强，优势行业形成全球创新引领能力，全面实现工业化。

第三步：新中国成立一百年时，制造业大国地位更加巩固，综合实力进入世界制造强国前列。制造业主要领域具有创新引领能力和明显竞争优势，建成全球领先的技术体系和产业体系。

2020年和2025年制造业主要指标

类别	指　　标	2013年	2015年	2020年	2025年
创新能力	规模以上制造业研发经费内部支出占主营业务收入比重（%）	0.88	0.95	1.26	1.68
	规模以上制造业每亿元主营业务收入有效发明专利数[1]（件）	0.36	0.44	0.70	1.10
质量效益	制造业质量竞争力指数[2]	83.1	83.5	84.5	85.5
	制造业增加值率提高	-	-	比2015年提高2个百分点	比2015年提高4个百分点
	制造业全员劳动生产率增速（%）	-	-	7.5左右（“十三五”期间年均增速）	6.5左右（“十四五”期间年均增速）
两化融合	宽带普及率[3]（%）	37	50	70	82
	数字化研发设计工具普及率[4]（%）	52	58	72	84
	关键工序数控化率[5]（%）	27	33	50	64
绿色发展	规模以上单位工业增加值能耗下降幅度	-	-	比2015年下降18%	比2015年下降34%
	单位工业增加值二氧化碳排放量下降幅度	-	-	比2015年下降22%	比2015年下降40%
	单位工业增加值用水量下降幅度	-	-	比2015年下降23%	比2015年下降41%
	工业固体废物综合利用率（%）	62	65	73	79

1 规模以上制造业每亿元主营业务收入有效发明专利数=规模以上制造企业有效发明专利数/规模以上制造企业主营业务收入。

2 制造业质量竞争力指数是反映我国制造业质量整体水平的经济技术综合指标，由质量水平和发展能力两个方面共计12项具体指标计算得出。

3 宽带普及率用固定宽带家庭普及率代表，固定宽带家庭普及率=固定宽带家庭用户数/家庭户数。

4 数字化研发设计工具普及率=应用数字化研发设计工具的规模以上企业数量/规模以上企业总数量（相关数据来源于3万家样本企业，下同）。

5 关键工序数控化率为规模以上工业企业关键工序数控化率的平均值。

三、战略任务和重点

实现制造强国的战略目标，必须坚持问题导向，统筹谋划，突出重点；必须凝聚全社会共识，加快制造业转型升级，全面提高发展质量和核心竞争力。

（一）提高国家制造业创新能力。

完善以企业为主体、市场为导向、政产学研用相结合的制造业创新体系。围绕产业链部署创新链，围绕创新链配置资源链，加强关键核心技术攻关，加速科技成果产业化，提高关键环节和重点领域的创新能力。

加强关键核心技术研发。强化企业技术创新主体地位，支持企业提升创新能力，推进国家技术创新示范企业和企业技术中心建设，充分吸纳企业参与国家科技计划的决策和实施。瞄准国家重大战略需求和未来产业发展制高点，定期研究制定发布制造业重点领域技术创新路线图。继续抓紧实施国家科技重大专项，通过国家科技计划（专项、基金等）支持关键核心技术研发。发挥行业骨干企业的主导作用和高等院校、科研院所的基础作用，建立一批产业创新联盟，开展政产学研用协同创新，攻克一批对产业竞争力整体提升具有全局性影响、带动性强的关键共性技术，加快成果转化。

提高创新设计能力。在传统制造业、战略性新兴产业、现代服务业等重点领域开展创新设计示范，全面推广应用以绿色、智能、协同为特征的先进设计技术。加强设计领域共性关键技术研发，攻克信息化设计、过程集成设计、复杂过程和系统设计等共性技术，开发一批具有自主知识产权的关键设计工具软件，建设完善创新设计生态系统。建设若干具有世界影响力的创新设计集群，培育一批专业化、开放型的工业设计企业，鼓励代工企业建立研究设计中心，向代设计和出口自主品牌产品转变。发展各类创新设计教育，设立国家工业设计奖，激发全社会创新设计的积极性和主动性。

推进科技成果产业化。完善科技成果转化运行机制，研究制定促进科技成果转化和产业化的指导意见，建立完善科技成果信息发布

和共享平台，健全以技术交易市场为核心的技术转移和产业化服务体系。完善科技成果转化激励机制，推动事业单位科技成果使用、处置和收益管理改革，健全科技成果科学评估和市场定价机制。完善科技成果转化协同推进机制，引导政产学研用按照市场规律和创新规律加强合作，鼓励企业和社会资本建立一批从事技术集成、熟化和工程化的中试基地。加快国防科技成果转化和产业化进程，推进军民技术双向转移转化。

完善国家制造业创新体系。加强顶层设计，加快建立以创新中心为核心载体、以公共服务平台和工程数据中心为重要支撑的制造业创新网络，建立市场化的创新方向选择机制和鼓励创新的风险分担、利益共享机制。充分利用现有科技资源，围绕制造业重大共性需求，采取政府与社会合作、政产学研用产业创新战略联盟等新机制新模式，形成一批制造业创新中心（工业技术研究基地），开展关键共性重大技术研究和产业化应用示范。建设一批促进制造业协同创新的公共服务平台，规范服务标准，开展技术研发、检验检测、技术评价、技术交易、质量认证、人才培训等专业化服务，促进科技成果转化和推广应用。建设重点领域制造业工程数据中心，为企业提供创新知识和工程数据的开放共享服务。面向制造业关键共性技术，建设一批重大科学研究和实验设施，提高核心企业系统集成能力，促进向价值链高端延伸。

专栏1　制造业创新中心（工业技术研究基地）建设工程
围绕重点行业转型升级和新一代信息技术、智能制造、增材制造、新材料、生物医药等领域创新发展的重大共性需求，形成一批制造业创新中心（工业技术研究基地），重点开展行业基础和共性关键技术研发、成果产业化、人才培训等工作。制定完善制造业创新中心遴选、考核、管理的标准和程序。 到2020年，重点形成15家左右制造业创新中心（工业技术研究基地），力争到2025年形成40家左右制造业创新中心（工业技术研究基地）。

加强标准体系建设。改革标准体系和标准化管理体制，组织实施制造业标准化提升计划，在智能制造等重点领域开展综合标准化工作。发挥企业在标准制定中的重要作用，支持组建重点领域标准推进联盟，建设标准创新研究基地，协同推进产品研发与标准制定。制定满足市场和创新需要的团体标准，建立企业产品和服务标准自我声明公开和监督制度。鼓励和支持企业、科研院所、行业组织等参与国际标准制定，加快我国标准国际化进程。大力推动国防装备采用先进的民用标准，推动军用技术标准向民用领域的转化和应用。做好标准的宣传贯彻，大力推动标准实施。

强化知识产权运用。加强制造业重点领域关键核心技术知识产权储备，构建产业化导向的专利组合和战略布局。鼓励和支持企业运用知识产权参与市场竞争，培育一批具备知识产权综合实力的优势企业，支持组建知识产权联盟，推动市场主体开展知识产权协同运用。稳妥推进国防知识产权解密和市场化应用。建立健全知识产权评议机制，鼓励和支持行业骨干企业与专业机构在重点领域合作开展专利评估、收购、运营、风险预警与应对。构建知识产权综合运用公共服务平台。鼓励开展跨国知识产权许可。研究制定降低中小企业知识产权申请、保护及维权成本的政策措施。

（二）推进信息化与工业化深度融合。

加快推动新一代信息技术与制造技术融合发展，把智能制造作为两化深度融合的主攻方向；着力发展智能装备和智能产品，推进生产过程智能化，培育新型生产方式，全面提升企业研发、生产、管理和服务的智能化水平。

研究制定智能制造发展战略。编制智能制造发展规划，明确发展目标、重点任务和重大布局。加快制定智能制造技术标准，建立完善智能制造和两化融合管理标准体系。强化应用牵引，建立智能制造产业联盟，协同推动智能装备和产品研发、系统集成创新与产业化。促进工业互联网、云计算、大数据在企业研发设计、生产制造、经营管理、销售服务等全流程和全产业链的综合集成应用。加强智能制造工业控制系统网络安全保障能力建设，健全综合保障体系。

加快发展智能制造装备和产品。组织研发具有深度感知、智慧决策、自动执行功能的高档数控机床、工业机器人、增材制造装备等智能制造装备以及智能化生产线，突破新型传感器、智能测量仪表、工业控制系统、伺服电机及驱动器和减速器等智能核心装置，推进工程化和产业化。加快机械、航空、船舶、汽车、轻工、纺织、食品、电子等行业生产设备的智能化改造，提高精准制造、敏捷制造能力。统筹布局和推动智能交通工具、智能工程机械、服务机器人、智能家电、智能照明电器、可穿戴设备等产品研发和产业化。

推进制造过程智能化。在重点领域试点建设智能工厂/数字化车间，加快人机智能交互、工业机器人、智能物流管理、增材制造等技术和装备在生产过程中的应用，促进制造工艺的仿真优化、数字化控制、状态信息实时监测和自适应控制。加快产品全生命周期管理、客户关系管理、供应链管理系统的推广应用，促进集团管控、设计与制造、产供销一体、业务和财务衔接等关键环节集成，实现智能管控。加快民用爆炸物品、危险化学品、食品、印染、稀土、农药等重点行业智能检测监管体系建设，提高智能化水平。

深化互联网在制造领域的应用。制定互联网与制造业融合发展的路线图，明确发展方向、目标和路径。发展基于互联网的个性化定制、众包设计、云制造等新型制造模式，推动形成基于消费需求动态感知的研发、制造和产业组织方式。建立优势互补、合作共赢的开放型产业生态体系。加快开展物联网技术研发和应用示范，培育智能监测、远程诊断管理、全产业链追溯等工业互联网新应用。实施工业云及工业大数据创新应用试点，建设一批高质量的工业云服务和工业大数据平台，推动软件与服务、设计与制造资源、关键技术与标准的开放共享。

加强互联网基础设施建设。加强工业互联网基础设施建设规划与布局，建设低时延、高可靠、广覆盖的工业互联网。加快制造业集聚区光纤网、移动通信网和无线局域网的部署和建设，实现信息网络宽带升级，提高企业宽带接入能力。针对信息物理系统网络研发及应用需求，组织开发智能控制系统、工业应用软件、故障诊断软件和相关工具、传感和通信系统协议，实现人、设备与产品的实时联通、精确识别、有效交互与智能控制。

专栏2　智能制造工程
紧密围绕重点制造领域关键环节，开展新一代信息技术与制造装备融合的集成创新和工程应用。支持政产学研用联合攻关，开发智能产品和自主可控的智能装置并实现产业化。依托优势企业，紧扣关键工序智能化、关键岗位机器人替代、生产过程智能优化控制、供应链优化，建设重点领域智能工厂/数字化车间。在基础条件好、需求迫切的重点地区、行业和企业中，分类实施流程制造、离散制造、智能装备和产品、新业态新模式、智能化管理、智能化服务等试点示范及应用推广。建立智能制造标准体系和信息安全保障系统，搭建智能制造网络系统平台。 到2020年，制造业重点领域智能化水平显著提升，试点示范项目运营成本降低30%，产品生产周期缩短30%，不良品率降低30%。到2025年，制造业重点领域全面实现智能化，试点示范项目运营成本降低50%，产品生产周期缩短50%，不良品率降低50%。

（三）强化工业基础能力。

核心基础零部件（元器件）、先进基础工艺、关键基础材料和产业技术基础（以下统称“四基”）等工业基础能力薄弱，是制约我国制造业创新发展和质量提升的症结所在。要坚持问题导向、产需结合、协同创新、重点突破的原则，着力破解制约重点产业发展的瓶颈。

统筹推进“四基”发展。制定工业强基实施方案，明确重点方向、主要目标和实施路径。制定工业“四基”发展指导目录，发布工业强基发展报告，组织实施工业强基工程。统筹军民两方面资源，开展军民两用技术联合攻关，支持军民技术相互有效利用，促进基础领域融合发展。强化基础领域标准、计量体系建设，加快实施对标达标，提升基础产品的质量、可靠性和寿命。建立多部门协调推进机制，引导各类要素向基础领域集聚。

加强“四基”创新能力建设。强化前瞻性基础研究，着力解决影响核心基础零部件（元器件）产品性能和稳定性的关键共性技术。建立基础工艺创新体系，利用现有资源建立关键共性基础工艺研究机构，开展先进成型、加工等关键制造工艺联合攻关；支持企业开展工艺创新，培养工艺专业人才。加大基础专用材料研发力度，提高专用材料自给保障能力和制备技术水平。建立国家工业基础数据库，加强企业试验检测数据和计量数据的采集、管理、应用和积累。加大对“四基”领域技术研发的支持力度，引导产业投资基金和创业投资基金投向“四基”领域重点项目。

推动整机企业和“四基”企业协同发展。注重需求侧激励，产用结合，协同攻关。依托国家科技计划（专项、基金等）和相关工程等，在数控机床、轨道交通装备、航空航天、发电设备等重点领域，引导整机企业和“四基”企业、高校、科研院所产需对接，建立产业联盟，形成协同创新、产用结合、以市场促基础产业发展的新模式，提升重大装备自主可控水平。开展工业强基示范应用，完善首台（套）、首批次政策，支持核心基础零部件（元器件）、先进基础工艺、关键基础材料推广应用。

专栏3　工业强基工程
开展示范应用，建立奖励和风险补偿机制，支持核心基础零部件（元器件）、先进基础工艺、关键基础材料的首批次或跨领域应用。组织重点突破，针对重大工程和重点装备的关键技术和产品急需，支持优势企业开展政产学研用联合攻关，突破关键基础材料、核心基础零部件的工程化、产业化瓶颈。强化平台支撑，布局和组建一批"四基"研究中心，创建一批公共服务平台，完善重点产业技术基础体系。 到2020年，40%的核心基础零部件、关键基础材料实现自主保障，受制于人的局面逐步缓解，航天装备、通信装备、发电与输变电设备、工程机械、轨道交通装备、家用电器等产业急需的核心基础零部件（元器件）和关键基础材料的先进制造工艺得到推广应用。到2025年，70%的核心基础零部件、关键基础材料实现自主保障，80种标志性先进工艺得到推广应用，部分达到国际领先水平，建成较为完善的产业技术基础服务体系，逐步形成整机牵引和基础支撑协调互动的产业创新发展格局。

（四）加强质量品牌建设。

提升质量控制技术，完善质量管理机制，夯实质量发展基础，优化质量发展环境，努力实现制造业质量大幅提升。鼓励企业追求卓越品质，形成具有自主知识产权的名牌产品，不断提升企业品牌价值和中国制造整体形象。

推广先进质量管理技术和方法。建设重点产品标准符合性认定平台，推动重点产品技术、安全标准全面达到国际先进水平。开展质量标杆和领先企业示范活动，普及卓越绩效、六西格玛、精益生产、质量诊断、质量持续改进等先进生产管理模式和方法。支持企业提高质量在线监测、在线控制和产品全生命周期质量追溯能力。组织开展重点行业工艺优化行动，提升关键工艺过程控制水平。开展质量管理小组、现场改进等群众性质量管理活动示范推广。加强中小企业质量管理，开展质量安全培训、诊断和辅导活动。

加快提升产品质量。实施工业产品质量提升行动计划，针对汽车、高档数控机床、轨道交通装备、大型成套技术装备、工程机械、特种设备、关键原材料、基础零部件、电子元器件等重点行业，组织攻克一批长期困扰产品质量提升的关键共性质量技术，加强可靠性设计、试验与验证技术开发应用，推广采用先进成型和加工方法、在线检测装置、智能化生产和物流系统及检测设备等，使重点实物产品的性能稳定性、质量可靠性、环境适应性、使用寿命等指标达到国际同类产品先进水平。在食品、药品、婴童用品、家电等领域实施覆盖产品全生命周期的质量管理、质量自我声明和质量追溯制度，保障重点消费品质量安全。大力提高国防装备质量可靠性，增强国防

装备实战能力。

完善质量监管体系。健全产品质量标准体系、政策规划体系和质量管理法律法规。加强关系民生和安全等重点领域的行业准入与市场退出管理。建立消费品生产经营企业产品事故强制报告制度，健全质量信用信息收集和发布制度，强化企业质量主体责任。将质量违法违规记录作为企业诚信评级的重要内容，建立质量黑名单制度，加大对质量违法和假冒品牌行为的打击和惩处力度。建立区域和行业质量安全预警制度，防范化解产品质量安全风险。严格实施产品“三包”、产品召回等制度。强化监管检查和责任追究，切实保护消费者权益。

夯实质量发展基础。制定和实施与国际先进水平接轨的制造业质量、安全、卫生、环保及节能标准。加强计量科技基础及前沿技术研究，建立一批制造业发展急需的高准确度、高稳定性计量基标准，提升与制造业相关的国家量传溯源能力。加强国家产业计量测试中心建设，构建国家计量科技创新体系。完善检验检测技术保障体系，建设一批高水平的工业产品质量控制和技术评价实验室、产品质量监督检验中心，鼓励建立专业检测技术联盟。完善认证认可管理模式，提高强制性产品认证的有效性，推动自愿性产品认证健康发展，提升管理体系认证水平，稳步推进国际互认。支持行业组织发布自律规范或公约，开展质量信誉承诺活动。

推进制造业品牌建设。引导企业制定品牌管理体系，围绕研发创新、生产制造、质量管理和营销服务全过程，提升内在素质，夯实品牌发展基础。扶持一批品牌培育和运营专业服务机构，开展品牌管理咨询、市场推广等服务。健全集体商标、证明商标注册管理制度。打造一批特色鲜明、竞争力强、市场信誉好的产业集群区域品牌。建设品牌文化，引导企业增强以质量和信誉为核心的品牌意识，树立品牌消费理念，提升品牌附加值和软实力。加速我国品牌价值评价国际化进程，充分发挥各类媒体作用，加大中国品牌宣传推广力度，树立中国制造品牌良好形象。

（五）全面推行绿色制造。

加大先进节能环保技术、工艺和装备的研发力度，加快制造业绿色改造升级；积极推行低碳化、循环化和集约化，提高制造业资源利用效率；强化产品全生命周期绿色管理，努力构建高效、清洁、低碳、循环的绿色制造体系。

加快制造业绿色改造升级。全面推进钢铁、有色、化工、建材、轻工、印染等传统制造业绿色改造，大力研发推广余热余压回收、水循环利用、重金属污染减量化、有毒有害原料替代、废渣资源化、脱硫脱硝除尘等绿色工艺技术装备，加快应用清洁高效铸造、锻压、焊接、表面处理、切削等加工工艺，实现绿色生产。加强绿色产品研发应用，推广轻量化、低功耗、易回收等技术工艺，持续提升电机、锅炉、内燃机及电器等终端用能产品能效水平，加快淘汰落后机电产品和技术。积极引领新兴产业高起点绿色发展，大幅降低电子信息产品生产、使用能耗及限用物质含量，建设绿色数据中心和绿色基站，大力促进新材料、新能源、高端装备、生物产业绿色低碳发展。

推进资源高效循环利用。支持企业强化技术创新和管理，增强绿色精益制造能力，大幅降低能耗、物耗和水耗水平。持续提高绿色低碳能源使用比率，开展工业园区和企业分布式绿色智能微电网建设，控制和削减化石能源消费量。全面推行循环生产方式，促进企业、园区、行业间链接共生、原料互供、资源共享。推进资源再生利用产业规范化、规模化发展，强化技术装备支撑，提高大宗工业固体废弃物、废旧金属、废弃电器电子产品等综合利用水平。大力发展再制造产业，实施高端再制造、智能再制造、在役再制造，推进产品认定，促进再制造产业持续健康发展。

积极构建绿色制造体系。支持企业开发绿色产品，推行生态设计，显著提升产品节能环保低碳水平，引导绿色生产和绿色消费。建设绿色工厂，实现厂房集约化、原料无害化、生产洁净化、废物资源化、能源低碳化。发展绿色园区，推进工业园区产业耦合，实现近零排放。打造绿色供应链，加快建立以资源节约、环境友好为导向的采购、生产、营销、回收及物流体系，落实生产者责任延伸制度。壮大绿色企业，支持企业实施绿色战略、绿色标准、绿色管理和绿色生产。强化绿色监管，健全节能环保法规、标准体系，加强节能环保监察，推行企业社会责任报告制度，开展绿色评价。

专栏4　绿色制造工程
组织实施传统制造业能效提升、清洁生产、节水治污、循环利用等专项技术改造。开展重大节能环保、资源综合利用、再制造、低碳技术产业化示范。实施重点区域、流域、行业清洁生产水平提升计划，扎实推进大气、水、土壤污染源头防治专项。制定绿色产品、绿色工厂、绿色园区、绿色企业标准体系，开展绿色评价。 到2020年，建成千家绿色示范工厂和百家绿色示范园区，部分重化工行业能源资源消耗出现拐点，重点行业主要污染物排放强度下降20%。到2025年，制造业绿色发展和主要产品单耗达到世界先进水平，绿色制造体系基本建立。

（六）大力推动重点领域突破发展。

瞄准新一代信息技术、高端装备、新材料、生物医药等战略重点，引导社会各类资源集聚，推动优势和战略产业快速发展。

1.新一代信息技术产业。

集成电路及专用装备。着力提升集成电路设计水平，不断丰富知识产权（IP）核和设计工具，突破关系国家信息与网络安全及电子整机产业发展的核心通用芯片，提升国产芯片的应用适配能力。掌握高密度封装及三维（3D）微组装技术，提升封装产业和测试的自主发展能力。形成关键制造装备供货能力。

信息通信设备。掌握新型计算、高速互联、先进存储、体系化安全保障等核心技术，全面突破第五代移动通信（5G）技术、核心路由交换技术、超高速大容量智能光传输技术、“未来网络”核心技术和体系架构，积极推动量子计算、神经网络等发展。研发高端服务

器、大容量存储、新型路由交换、新型智能终端、新一代基站、网络安全等设备，推动核心信息通信设备体系化发展与规模化应用。

操作系统及工业软件。开发安全领域操作系统等工业基础软件。突破智能设计与仿真及其工具、制造物联与服务、工业大数据处理等高端工业软件核心技术，开发自主可控的高端工业平台软件和重点领域应用软件，建立完善工业软件集成标准与安全测评体系。推进自主工业软件体系化发展和产业化应用。

2.高档数控机床和机器人。

高档数控机床。开发一批精密、高速、高效、柔性数控机床与基础制造装备及集成制造系统。加快高档数控机床、增材制造等前沿技术和装备的研发。以提升可靠性、精度保持性为重点，开发高档数控系统、伺服电机、轴承、光栅等主要功能部件及关键应用软件，加快实现产业化。加强用户工艺验证能力建设。

机器人。围绕汽车、机械、电子、危险品制造、国防军工、化工、轻工等工业机器人、特种机器人，以及医疗健康、家庭服务、教育娱乐等服务机器人应用需求，积极研发新产品，促进机器人标准化、模块化发展，扩大市场应用。突破机器人本体、减速器、伺服电机、控制器、传感器与驱动器等关键零部件及系统集成设计制造等技术瓶颈。

3.航空航天装备。

航空装备。加快大型飞机研制，适时启动宽体客机研制，鼓励国际合作研制重型直升机；推进干支线飞机、直升机、无人机和通用飞机产业化。突破高推重比、先进涡桨（轴）发动机及大涵道比涡扇发动机技术，建立发动机自主发展工业体系。开发先进机载设备及系统，形成自主完整的航空产业链。

航天装备。发展新一代运载火箭、重型运载器，提升进入空间能力。加快推进国家民用空间基础设施建设，发展新型卫星等空间平台与有效载荷、空天地宽带互联网系统，形成长期持续稳定的卫星遥感、通信、导航等空间信息服务能力。推动载人航天、月球探测工程，适度发展深空探测。推进航天技术转化与空间技术应用。

4.海洋工程装备及高技术船舶。大力发展深海探测、资源开发利用、海上作业保障装备及其关键系统和专用设备。推动深海空间站、大型浮式结构物的开发和工程化。形成海洋工程装备综合试验、检测与鉴定能力，提高海洋开发利用水平。突破豪华邮轮设计建造技术，全面提升液化天然气船等高技术船舶国际竞争力，掌握重点配套设备集成化、智能化、模块化设计制造核心技术。

5.先进轨道交通装备。加快新材料、新技术和新工艺的应用，重点突破体系化安全保障、节能环保、数字化智能化网络化技术，研制先进可靠适用的产品和轻量化、模块化、谱系化产品。研发新一代绿色智能、高速重载轨道交通装备系统，围绕系统全寿命周期，向用户提供整体解决方案，建立世界领先的现代轨道交通产业体系。

6.节能与新能源汽车。继续支持电动汽车、燃料电池汽车发展，掌握汽车低碳化、信息化、智能化核心技术，提升动力电池、驱动电机、高效内燃机、先进变速器、轻量化材料、智能控制等核心技术的工程化和产业化能力，形成从关键零部件到整车的完整工业体系和创新体系，推动自主品牌节能与新能源汽车同国际先进水平接轨。

7.电力装备。推动大型高效超净排放煤电机组产业化和示范应用，进一步提高超大容量水电机组、核电机组、重型燃气轮机制造水平。推进新能源和可再生能源装备、先进储能装置、智能电网用输变电及用户端设备发展。突破大功率电力电子器件、高温超导材料等关键元器件和材料的制造及应用技术，形成产业化能力。

8.农机装备。重点发展粮、棉、油、糖等大宗粮食和战略性经济作物育、耕、种、管、收、运、贮等主要生产过程使用的先进农机装备，加快发展大型拖拉机及其复式作业机具、大型高效联合收割机等高端农业装备及关键核心零部件。提高农机装备信息收集、智能决策和精准作业能力，推进形成面向农业生产的信息化整体解决方案。

9.新材料。以特种金属功能材料、高性能结构材料、功能性高分子材料、特种无机非金属材料和先进复合材料为发展重点，加快研发先进熔炼、凝固成型、气相沉积、型材加工、高效合成等新材料制备关键技术和装备，加强基础研究和体系建设，突破产业化制备瓶颈。积极发展军民共用特种新材料，加快技术双向转移转化，促进新材料产业军民融合发展。高度关注颠覆性新材料对传统材料的影响，做好超导材料、纳米材料、石墨烯、生物基材料等战略前沿材料提前布局和研制。加快基础材料升级换代。

10.生物医药及高性能医疗器械。发展针对重大疾病的化学药、中药、生物技术药物新产品，重点包括新机制和新靶点化学药、抗体药物、抗体偶联药物、全新结构蛋白及多肽药物、新型疫苗、临床优势突出的创新中药及个性化治疗药物。提高医疗器械的创新能力和产业化水平，重点发展影像设备、医用机器人等高性能诊疗设备，全降解血管支架等高值医用耗材，可穿戴、远程诊疗等移动医疗产品。实现生物3D打印、诱导多能干细胞等新技术的突破和应用。

专栏5　高端装备创新工程
组织实施大型飞机、航空发动机及燃气轮机、民用航天、智能绿色列车、节能与新能源汽车、海洋工程装备及高技术船舶、智能电网成套装备、高档数控机床、核电装备、高端诊疗设备等一批创新和产业化专项、重大工程。开发一批标志性、带动性强的重点产品和重大装备，提升自主设计水平和系统集成能力，突破共性关键技术与工程化、产业化瓶颈，组织开展应用试点和示范，提高创新发展能力和国际竞争力，抢占竞争制高点。 到2020年，上述领域实现自主研制及应用。到2025年，自主知识产权高端装备市场占有率大幅提升，核心技术对外依存度明显下降，基础配套能力显著增强，重要领域装备达到国际领先水平。

（七）深入推进制造业结构调整。

推动传统产业向中高端迈进，逐步化解过剩产能，促进大企业与中小企业协调发展，进一步优化制造业布局。

持续推进企业技术改造。明确支持战略性重大项目和高端装备实施技术改造的政策方向，稳定中央技术改造引导资金规模，通过贴息等方式，建立支持企业技术改造的长效机制。推动技术改造相关立法，强化激励约束机制，完善促进企业技术改造的政策体系。支持重点行业、高端产品、关键环节进行技术改造，引导企业采用先进适用技术，优化产品结构，全面提升设计、制造、工艺、管理水平，促进钢铁、石化、工程机械、轻工、纺织等产业向价值链高端发展。研究制定重点产业技术改造投资指南和重点项目导向计划，吸引社会资金参与，优化工业投资结构。围绕两化融合、节能降耗、质量提升、安全生产等传统领域改造，推广应用新技术、新工艺、新装备、新材料，提高企业生产技术水平和效益。

稳步化解产能过剩矛盾。加强和改善宏观调控，按照“消化一批、转移一批、整合一批、淘汰一批”的原则，分业分类施策，有效化解产能过剩矛盾。加强行业规范和准入管理，推动企业提升技术装备水平，优化存量产能。加强对产能严重过剩行业的动态监测分析，建立完善预警机制，引导企业主动退出过剩行业。切实发挥市场机制作用，综合运用法律、经济、技术及必要的行政手段，加快淘汰落后产能。

促进大中小企业协调发展。强化企业市场主体地位，支持企业间战略合作和跨行业、跨区域兼并重组，提高规模化、集约化经营水平，培育一批核心竞争力强的企业集团。激发中小企业创业创新活力，发展一批主营业务突出、竞争力强、成长性好、专注于细分市场的专业化“小巨人”企业。发挥中外中小企业合作园区示范作用，利用双边、多边中小企业合作机制，支持中小企业走出去和引进来。引导大企业与中小企业通过专业分工、服务外包、订单生产等多种方式，建立协同创新、合作共赢的协作关系。推动建设一批高水平的中小企业集群。

优化制造业发展布局。落实国家区域发展总体战略和主体功能区规划，综合考虑资源能源、环境容量、市场空间等因素，制定和实施重点行业布局规划，调整优化重大生产力布局。完善产业转移指导目录，建设国家产业转移信息服务平台，创建一批承接产业转移示范园区，引导产业合理有序转移，推动东中西部制造业协调发展。积极推动京津冀和长江经济带产业协同发展。按照新型工业化的要求，改造提升现有制造业集聚区，推动产业集聚向产业集群转型升级。建设一批特色和优势突出、产业链协同高效、核心竞争力强、公共服务体系健全的新型工业化示范基地。

（八）积极发展服务型制造和生产性服务业。

加快制造与服务的协同发展，推动商业模式创新和业态创新，促进生产型制造向服务型制造转变。大力发展与制造业紧密相关的生产性服务业，推动服务功能区和服务平台建设。

推动发展服务型制造。研究制定促进服务型制造发展的指导意见，实施服务型制造行动计划。开展试点示范，引导和支持制造业企业延伸服务链条，从主要提供产品制造向提供产品和服务转变。鼓励制造业企业增加服务环节投入，发展个性化定制服务、全生命周期管理、网络精准营销和在线支持服务等。支持有条件的企业由提供设备向提供系统集成总承包服务转变，由提供产品向提供整体解决方案转变。鼓励优势制造业企业“裂变”专业优势，通过业务流程再造，面向行业提供社会化、专业化服务。支持符合条件的制造业企业建立企业财务公司、金融租赁公司等金融机构，推广大型制造设备、生产线等融资租赁服务。

加快生产性服务业发展。大力发展面向制造业的信息技术服务，提高重点行业信息应用系统的方案设计、开发、综合集成能力。鼓励互联网等企业发展移动电子商务、在线定制、线上到线下等创新模式，积极发展对产品、市场的动态监控和预测预警等业务，实现与制造业企业的无缝对接，创新业务协作流程和价值创造模式。加快发展研发设计、技术转移、创业孵化、知识产权、科技咨询等科技服务业，发展壮大第三方物流、节能环保、检验检测认证、电子商务、服务外包、融资租赁、人力资源服务、售后服务、品牌建设等生产性服务业，提高对制造业转型升级的支撑能力。

强化服务功能区和公共服务平台建设。建设和提升生产性服务业功能区，重点发展研发设计、信息、物流、商务、金融等现代服务业，增强辐射能力。依托制造业集聚区，建设一批生产性服务业公共服务平台。鼓励东部地区企业加快制造业服务化转型，建立生产服务基地。支持中西部地区发展具有特色和竞争力的生产性服务业，加快产业转移承接地服务配套设施和能力建设，实现制造业和服务业协同发展。

（九）提高制造业国际化发展水平。

统筹利用两种资源、两个市场，实行更加积极的开放战略，将引进来与走出去更好结合，拓展新的开放领域和空间，提升国际合作的水平和层次，推动重点产业国际化布局，引导企业提高国际竞争力。

提高利用外资与国际合作水平。进一步放开一般制造业，优化开放结构，提高开放水平。引导外资投向新一代信息技术、高端装备、新材料、生物医药等高端制造领域，鼓励境外企业和科研机构在我国设立全球研发机构。支持符合条件的企业在境外发行股票、债券，鼓励与境外企业开展多种形式的技术合作。

提升跨国经营能力和国际竞争力。支持发展一批跨国公司，通过全球资源利用、业务流程再造、产业链整合、资本市场运作等方式，加快提升核心竞争力。支持企业在境外开展并购和股权投资、创业投资，建立研发中心、实验基地和全球营销及服务体系；依托互联网开展网络协同设计、精准营销、增值服务创新、媒体品牌推广等，建立全球产业链体系，提高国际化经营能力和服务水平。鼓励优势企业加快发展国际总承包、总集成。引导企业融入当地文化，增强社会责任意识，加强投资和经营风险管理，提高企业境外本土化能力。

深化产业国际合作，加快企业走出去。加强顶层设计，制定制造业走出去发展总体战略，建立完善统筹协调机制。积极参与和推动国际产业合作，贯彻落实丝绸之路经济带和21世纪海上丝绸之路等重大战略部署，加快推进与周边国家互联互通基础设施建设，深化产业合作。发挥沿边开放优势，在有条件的国家和地区建设一批境外制造业合作园区。坚持政府推动、企业主导，创新商业模式，鼓励高端装备、先进技术、优势产能向境外转移。加强政策引导，推动产业合作由加工制造环节为主向合作研发、联合设计、市场营销、品牌

培育等高端环节延伸，提高国际合作水平。创新加工贸易模式，延长加工贸易国内增值链条，推动加工贸易转型升级。

四、战略支撑与保障

建设制造强国，必须发挥制度优势，动员各方面力量，进一步深化改革，完善政策措施，建立灵活高效的实施机制，营造良好环境；必须培育创新文化和中国特色制造文化，推动制造业由大变强。

（一）深化体制机制改革。

全面推进依法行政，加快转变政府职能，创新政府管理方式，加强制造业发展战略、规划、政策、标准等制定和实施，强化行业自律和公共服务能力建设，提高产业治理水平。简政放权，深化行政审批制度改革，规范审批事项，简化程序，明确时限；适时修订政府核准的投资项目目录，落实企业投资主体地位。完善政产学研用协同创新机制，改革技术创新管理体制机制和项目经费分配、成果评价和转化机制，促进科技成果资本化、产业化，激发制造业创新活力。加快生产要素价格市场化改革，完善主要由市场决定价格的机制，合理配置公共资源；推行节能量、碳排放权、排污权、水权交易制度改革，加快资源税从价计征，推动环境保护费改税。深化国有企业改革，完善公司治理结构，有序发展混合所有制经济，进一步破除各种形式的行业垄断，取消对非公有制经济的不合理限制。稳步推进国防科技工业改革，推动军民融合深度发展。健全产业安全审查机制和法规体系，加强关系国民经济命脉和国家安全的制造业重要领域投融资、并购重组、招标采购等方面的安全审查。

（二）营造公平竞争市场环境。

深化市场准入制度改革，实施负面清单管理，加强事中事后监管，全面清理和废止不利于全国统一市场建设的政策措施。实施科学规范的行业准入制度，制定和完善制造业节能节地节水、环保、技术、安全等准入标准，加强对国家强制性标准实施的监督检查，统一执法，以市场化手段引导企业进行结构调整和转型升级。切实加强监管，打击制售假冒伪劣行为，严厉惩处市场垄断和不正当竞争行为，为企业创造良好生产经营环境。加快发展技术市场，健全知识产权创造、运用、管理、保护机制。完善淘汰落后产能工作涉及的职工安置、债务清偿、企业转产等政策措施，健全市场退出机制。进一步减轻企业负担，实施涉企收费清单制度，建立全国涉企收费项目库，取缔各种不合理收费和摊派，加强监督检查和问责。推进制造业企业信用体系建设，建设中国制造信用数据库，建立健全企业信用动态评价、守信激励和失信惩戒机制。强化企业社会责任建设，推行企业产品标准、质量、安全自我声明和监督制度。

（三）完善金融扶持政策。

深化金融领域改革，拓宽制造业融资渠道，降低融资成本。积极发挥政策性金融、开发性金融和商业金融的优势，加大对新一代信息技术、高端装备、新材料等重点领域的支持力度。支持中国进出口银行在业务范围内加大对制造业走出去的服务力度，鼓励国家开发银行增加对制造业企业的贷款投放，引导金融机构创新符合制造业企业特点的产品和业务。健全多层次资本市场，推动区域性股权市场规范发展，支持符合条件的制造业企业在境内外上市融资、发行各类债务融资工具。引导风险投资、私募股权投资等支持制造业企业创新发展。鼓励符合条件的制造业贷款和租赁资产开展证券化试点。支持重点领域大型制造业企业集团开展产融结合试点，通过融资租赁方式促进制造业转型升级。探索开发适合制造业发展的保险产品和服务，鼓励发展贷款保证保险和信用保险业务。在风险可控和商业可持续的前提下，通过内保外贷、外汇及人民币贷款、债权融资、股权融资等方式，加大对制造业企业在境外开展资源勘探开发、设立研发中心和高技术企业以及收购兼并等的支持力度。

（四）加大财税政策支持力度。

充分利用现有渠道，加强财政资金对制造业的支持，重点投向智能制造、“四基”发展、高端装备等制造业转型升级的关键领域，为制造业发展创造良好政策环境。运用政府和社会资本合作（PPP）模式，引导社会资本参与制造业重大项目建设、企业技术改造和关键基础设施建设。创新财政资金支持方式，逐步从“补建设”向“补运营”转变，提高财政资金使用效益。深化科技计划（专项、基金等）管理改革，支持制造业重点领域科技研发和示范应用，促进制造业技术创新、转型升级和结构布局调整。完善和落实支持创新的政府采购政策，推动制造业创新产品的研发和规模化应用。落实和完善使用首台（套）重大技术装备等鼓励政策，健全研制、使用单位在产品创新、增值服务和示范应用等环节的激励约束机制。实施有利于制造业转型升级的税收政策，推进增值税改革，完善企业研发费用计核方法，切实减轻制造业企业税收负担。

（五）健全多层次人才培养体系。

加强制造业人才发展统筹规划和分类指导，组织实施制造业人才培养计划，加大专业技术人才、经营管理人才和技能人才的培养力度，完善从研发、转化、生产到管理的人才培养体系。以提高现代经营管理水平和企业竞争力为核心，实施企业经营管理人才素质提升工程和国家中小企业银河培训工程，培养造就一批优秀企业家和高水平经营管理人才。以高层次、急需紧缺专业技术人才和创新型人才为重点，实施专业技术人才知识更新工程和先进制造卓越工程师培养计划，在高等学校建设一批工程创新训练中心，打造高素质专业技术人才队伍。强化职业教育和技能培训，引导一批普通本科高等学校向应用技术类高等学校转型，建立一批实训基地，开展现代学徒制试点示范，形成一支门类齐全、技艺精湛的技术技能人才队伍。鼓励企业与学校合作，培养制造业急需的科研人员、技术技能人才与复合型人才，深化相关领域工程博士、硕士专业学位研究生招生和培养模式改革，积极推进产学研结合。加强产业人才需求预测，完善各类人才信息库，构建产业人才水平评价制度和信息发布平台。建立人才激励机制，加大对优秀人才的表彰和奖励力度。建立完善制造业人才服务机构，健全人才流动和使用的体制机制。采取多种形式选拔各类优秀人才重点是专业技术人才到国外学习培训，探索建立国际培训基地。加大制造业引智力度，引进领军人才和紧缺人才。

（六）完善中小微企业政策。

落实和完善支持小微企业发展的财税优惠政策，优化中小企业发展专项资金使用重点和方式。发挥财政资金杠杆撬动作用，吸引社会资本，加快设立国家中小企业发展基金。支持符合条件的民营资本依法设立中小型银行等金融机构，鼓励商业银行加大小微企业金融

服务专营机构建设力度，建立完善小微企业融资担保体系，创新产品和服务。加快构建中小微企业征信体系，积极发展面向小微企业的融资租赁、知识产权质押贷款、信用保险保单质押贷款等。建设完善中小企业创业基地，引导各类创业投资基金投资小微企业。鼓励大学、科研院所、工程中心等对中小企业开放共享各种实（试）验设施。加强中小微企业综合服务体系建设，完善中小微企业公共服务平台网络，建立信息互联互通机制，为中小微企业提供创业、创新、融资、咨询、培训、人才等专业化服务。

（七）进一步扩大制造业对外开放。

深化外商投资管理体制改革，建立外商投资准入前国民待遇加负面清单管理机制，落实备案为主、核准为辅的管理模式，营造稳定、透明、可预期的营商环境。全面深化外汇管理、海关监管、检验检疫管理改革，提高贸易投资便利化水平。进一步放宽市场准入，修订钢铁、化工、船舶等产业政策，支持制造业企业通过委托开发、专利授权、众包众创等方式引进先进技术和高端人才，推动利用外资由重点引进技术、资金、设备向合资合作开发、对外并购及引进领军人才转变。加强对外投资立法，强化制造业企业走出去法律保障，规范企业境外经营行为，维护企业合法权益。探索利用产业基金、国有资本收益等渠道支持高铁、电力装备、汽车、工程施工等装备和优势产能走出去，实施海外投资并购。加快制造业走出去支撑服务机构建设和水平提升，建立制造业对外投资公共服务平台和出口产品技术性贸易服务平台，完善应对贸易摩擦和境外投资重大事项预警协调机制。

（八）健全组织实施机制。

成立国家制造强国建设领导小组，由国务院领导同志担任组长，成员由国务院相关部门和单位负责同志担任。领导小组主要职责是：统筹协调制造强国建设全局性工作，审议重大规划、重大政策、重大工程专项、重大问题和重要工作安排，加强战略谋划，指导部门、地方开展工作。领导小组办公室设在工业和信息化部，承担领导小组日常工作。设立制造强国建设战略咨询委员会，研究制造业发展的前瞻性、战略性重大问题，对制造业重大决策提供咨询评估。支持包括社会智库、企业智库在内的多层次、多领域、多形态的中国特色新型智库建设，为制造强国建设提供强大智力支持。建立《中国制造2025》任务落实情况督促检查和第三方评价机制，完善统计监测、绩效评估、动态调整和监督考核机制。建立《中国制造2025》中期评估机制，适时对目标任务进行必要调整。

各地区、各部门要充分认识建设制造强国的重大意义，加强组织领导，健全工作机制，强化部门协同和上下联动。各地区要结合当地实际，研究制定具体实施方案，细化政策措施，确保各项任务落实到位。工业和信息化部要会同相关部门加强跟踪分析和督促指导，重大事项及时向国务院报告。

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解读

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Circular of the State Council on Printing and Distributing "Made in China 2025"

Guofa [2015] No. 28

The people's governments of all provinces, autonomous regions, and municipalities directly under the Central Government, all ministries and commissions of the State Council, and all institutions directly under the State Council:

"Made in China 2025" is now issued to you, please implement it conscientiously.

State Council

May 8, 2015

(This article has been deleted)

Made in China 2025

Manufacturing is the main body of the national economy, the foundation of a country, the tool of rejuvenation, and the foundation of a strong country. Since the beginning of industrial civilization in the middle of the eighteenth century, the history of the rise and fall of world powers and the struggle history of the Chinese nation have repeatedly proved that without a strong manufacturing industry, there will be no prosperity of the country and nation. Building an internationally competitive manufacturing industry is the only way for our country to enhance its comprehensive national strength, ensure national security, and build a world power.

Since the founding of the People's Republic of China, especially since the reform and opening up, my country's manufacturing industry has continued to develop rapidly, and an independent and complete industrial system with complete categories has been established, which has vigorously promoted the process of industrialization and modernization, significantly enhanced overall national strength, and supported China's status as a world power. However, compared with the world's advanced level, my country's manufacturing industry is still large but not strong. There are obvious gaps in independent innovation capability, resource utilization efficiency, industrial structure level, informatization degree, quality and efficiency, etc. The task of transformation, upgrading and leapfrog development is urgent. And daunting.

At present, a new round of scientific and technological revolution and industrial transformation has formed a historic intersection with my country's accelerated transformation of the economic development mode, and the international industrial division of labor is being reshaped. We must firmly seize this major historical opportunity, implement the strategy of manufacturing a strong country in accordance with the requirements of the "four comprehensive" strategic layout, strengthen overall planning and forward-looking deployment, and strive to achieve the 100th anniversary of the founding of New China through three decades of hard work. , build my country into a manufacturing powerhouse leading the development of the world's manufacturing industry, and lay a solid foundation for realizing the Chinese dream of the great rejuvenation of the Chinese nation.

"Made in China 2025" is the action program for the first ten years of my country's implementation of the strategy of manufacturing a powerful country.

1. Development situation and environment

(1) The global manufacturing industry is facing major adjustments.

The deep integration of the new generation of information technology and the manufacturing industry is triggering far-reaching industrial changes, forming new production methods, industrial forms, business models and economic growth points. All countries are stepping up scientific and technological innovation efforts to promote new breakthroughs in fields such as three-dimensional (3D) printing, mobile Internet, cloud computing, big data, bioengineering, new energy, and new materials. Smart manufacturing such as smart equipment and smart factories based on cyber-physical systems is leading the transformation of manufacturing methods; network crowdsourcing, collaborative design, large-scale personalized customization, precise supply chain management, full life cycle management, and e-commerce are reshaping industrial value Chain system; smart terminal products such as wearable smart products, smart home appliances, and smart cars continue to expand into new areas of manufacturing. my country's manufacturing industry has ushered in major opportunities for transformation, upgrading and innovative development.

The global industrial competition pattern is undergoing major adjustments, and my country is facing enormous challenges in the new round of development. After the outbreak of the international financial crisis, developed countries have implemented the strategy of "re-industrialization" to reshape the new advantages of manufacturing competition and accelerate the promotion of a new round of global trade and investment. Some developing countries are also speeding up planning and deployment, actively participating in the global industrial re-division, undertaking industrial and capital transfers, and expanding international market space. my country's manufacturing industry is facing the severe challenge of "two-way extrusion" from developed countries and other developing countries. We must look at the world, step up strategic deployment, focus on building a strong manufacturing country, consolidate the foundation and cultivate talents, turn challenges into opportunities, and seize a new round of competition in the manufacturing industry. commanding heights.

(2) Major changes have taken place in my country's economic development environment.

With the simultaneous advancement of new industrialization, informatization, urbanization, and agricultural modernization, the potential for ultra-large-scale domestic demand has been continuously released, providing a broad space for the development of my country's manufacturing industry. The new equipment needs of various industries, the new consumption needs of the people, the new livelihood needs of social management and public services, and the new security needs of national defense construction all require that the manufacturing The level and capabilities of supply and defense equipment support have been rapidly improved. Comprehensively deepening reform and further expanding opening up will continuously stimulate the development vitality and creativity of the manufacturing industry, and promote the transformation and upgrading of the manufacturing industry.

my country's economic development has entered a new normal, and the development of the manufacturing industry is facing new challenges. Resource and environmental constraints continue to intensify, the cost of production factors such as labor continues to rise, and the growth rate of investment and exports has slowed down significantly. The extensive development model that mainly relies on resource factor input and scale expansion is unsustainable. Adjustment of structure, transformation and upgrading, and improvement of quality and efficiency without delay. To form a new driving force for economic growth and create new advantages in international competition, the focus lies in the manufacturing industry, the difficulty lies in the manufacturing industry, and the way out lies in the manufacturing industry.

(3) The task of building a strong manufacturing country is arduous and urgent.

After decades of rapid development, the scale of my country's manufacturing industry has leapt to the first place in the world, and an independent and complete manufacturing system with complete categories has been established, which has become an important cornerstone to support my country's economic and social development and an important force to promote the development of the world economy. Continuous technological innovation has greatly improved the comprehensive competitiveness of my country's manufacturing industry. Manned spaceflight, manned deep diving, large aircraft, Beidou satellite navigation, supercomputers, high-speed rail equipment, million-kilowatt-level power generation equipment, and 10,000-meter deep-sea oil drilling equipment have made breakthroughs, forming a number of internationally competitive With strong advantageous industries and key enterprises, our country already has the foundation and conditions for building a powerful industrial country.

However, my country is still in the process of industrialization, and there is still a big gap compared with

advanced countries. The manufacturing industry is large but not strong, the independent innovation capability is weak, the key core technologies and high-end equipment are highly dependent on foreign countries, and the manufacturing innovation system with enterprises as the main body is not perfect; the product quality is not high, and there is no world-renowned brand; the utilization efficiency of resources and energy is low , the problem of environmental pollution is relatively prominent; the industrial structure is unreasonable, and the development of high-end equipment manufacturing and producer services lags behind; the level of informatization is not high, and the depth of integration with industrialization is not enough; the degree of internationalization of the industry is not high, and the globalization of enterprises is insufficient. To promote the construction of a strong manufacturing country, we must focus on solving the above problems.

To build a strong manufacturing country, we must firmly seize the rare strategic opportunities at present, actively respond to challenges, strengthen overall planning, highlight innovation-driven, formulate special policies, give full play to institutional advantages, mobilize the whole society to work hard, and rely more on Chinese equipment and China Brand, to realize the transformation from Made in China to Created in China, from China's speed to China's quality, from Chinese products to Chinese brands, and complete the strategic task of making China's manufacturing from big to strong.

2. Strategic guidelines and objectives

(1) Guiding ideology.

Fully implement the spirit of the 18th National Congress of the Communist Party of China and the Second, Third, and Fourth Plenary Sessions of the Eighteenth Central Committee, adhere to the road of new industrialization with Chinese characteristics, take promoting the innovation and development of the manufacturing industry as the theme, focus on improving quality and efficiency, and accelerate new The deep integration of the first generation of information technology and the manufacturing industry is the main line, and the promotion of intelligent manufacturing is the main direction of attack. The goal is to meet the needs of economic and social development and national defense construction for major technical equipment, strengthen industrial basic capabilities, improve the level of comprehensive integration, and improve multi-level and multi-level systems. Type talent training system, promote industrial transformation and upgrading, cultivate a manufacturing culture with Chinese characteristics, and realize the historical leap of the manufacturing industry from big to strong. The basic policy is:

——Innovation-driven. Persist in putting innovation at the core of the overall development of the manufacturing industry, improve the institutional environment conducive to innovation, promote cross-field and cross-industry collaborative innovation, break through a number of key common technologies in key fields, promote the digitalization, networking, and intelligence of the manufacturing industry, and take innovation-driven development path.

——Quality comes first. Adhere to quality as the lifeline of building a strong manufacturing country, strengthen the main responsibility of corporate quality, strengthen quality technology research, and cultivate independent brands. Build a system of regulations and standards, a quality supervision system, and an advanced quality culture, create a market environment for honest management, and take the development path of winning by quality.

--ECO development. Adhere to sustainable development as an important focus of building a strong manufacturing country, strengthen the promotion and application of energy-saving and environmental protection technologies, processes, and equipment, and comprehensively promote clean production. Develop circular economy, improve the efficiency of resource recycling, build a green manufacturing system, and follow the development path of ecological civilization.

- Structural optimization. Adhere to structural adjustment as a key link in building a manufacturing power, vigorously develop advanced manufacturing, transform and upgrade traditional industries, and promote the transformation of production-oriented manufacturing into service-oriented manufacturing. Optimize the industrial spatial layout, cultivate a group of industrial clusters and enterprise groups with core competitiveness, and take the development path of improving quality and efficiency.

——Talent-oriented. Persist in taking talents as the foundation of building a strong manufacturing country, establish and improve a scientific and reasonable mechanism for selecting, employing, and educating people, and accelerate the training of professional and technical personnel, management personnel, and skilled personnel that are urgently needed for the development of the manufacturing industry. Create an atmosphere of mass entrepreneurship and innovation, build a team of manufacturing talents with high quality and reasonable structure, and take a development path led by talents.

(2) Basic principles.

Market-led, government-guided.Comprehensively deepen reforms, give full play to the decisive role of the market in resource allocation, strengthen the dominant position of enterprises, and stimulate the vitality and creativity of enterprises. Actively transform government functions, strengthen strategic research and planning guidance, improve relevant support policies, and create a favorable environment for enterprise development.

Based on the present, focus on the long-term. Aiming at the bottlenecks and weak links that restrict the development of the manufacturing industry, accelerate transformation and upgrading, improve quality and efficiency, and effectively improve the core competitiveness and sustainable development capabilities of the manufacturing industry. Accurately grasp the trend of the new round of scientific and technological revolution and industrial transformation, strengthen strategic planning and forward-looking deployment, lay a solid foundation, and occupy the commanding heights in future competition.

Overall advancement and key breakthroughs. Adhere to the combination of a national game of chess and classified guidance for the development of the manufacturing industry, overall planning, rational layout, clear innovation and development directions, promote the in-depth development of military-civilian integration, and accelerate the promotion of the overall level of manufacturing. Focusing on the major needs of economic and social development and national security, integrate resources, highlight key points, implement a number of major projects, and achieve the first breakthrough.

Independent development, open cooperation. In basic, strategic, and overall areas related to the national economy, the people's livelihood, and industrial security, focus on mastering key core technologies, improving the industrial chain, and forming independent development capabilities. Continue to expand opening up, actively utilize global resources and markets, strengthen the global layout of industries and international exchanges and cooperation, form new comparative advantages, and improve the level of openness and development of the manufacturing industry.

(3) Strategic objectives.

Based on national conditions and reality, strive to achieve the strategic goal of manufacturing a powerful country through the "three steps".

The first step: strive to enter the ranks of manufacturing powers within ten years.

By 2020, industrialization will be basically realized, the status of a manufacturing power will be further consolidated, and the level of manufacturing informatization will be greatly improved. Mastered a number of key core technologies in key areas, further enhanced competitiveness in advantageous areas, and greatly improved product quality. Significant progress has been made in the digitization, networking, and intelligence of the manufacturing industry. Energy consumption, material consumption and pollutant discharge per unit of industrial added value in key industries have dropped significantly.

By 2025, the overall quality of the manufacturing industry will be greatly improved, the innovation capability will be significantly enhanced, the labor productivity of all employees will be significantly improved, and the integration of the two industries (industrialization and informatization) will reach a new level. The energy consumption, material consumption and pollutant discharge per unit of industrial added value in key industries have reached the world's advanced level. A group of multinational companies and industrial clusters with strong international competitiveness will be formed, and their position in the global industrial division of labor and value chain will be significantly improved.

The second step: By 2035, my country's manufacturing industry will reach the middle level of the world's manufacturing powers. The ability to innovate has been greatly improved, major breakthroughs have been made in the development of key areas, the overall competitiveness has been significantly enhanced, global innovation leadership has been formed in advantageous industries, and industrialization has been fully realized.

Step 3: When the People's Republic of China was founded for a hundred years, the status of a manufacturing power has been further consolidated, and its comprehensive strength has entered the forefront of the world's manufacturing powers. The main areas of the manufacturing industry have innovation leadership and obvious competitive advantages, and a world-leading technology system and industrial system have been established.

Key Indicators of Manufacturing in 2020 and 2025

category	index	year 2013	2015	2020	2025
Creativity	Proportion of internal R&D expenses of manufacturing enterprises above designated	0.88	0.95	1.26	1.68

	size in main business income (%)				
	The number of effective invention patents per 100 million yuan of main business income of the manufacturing industry above designated sizel (pieces)	0.36	0.44	0.70	1.10
quality benefit	Manufacturing Quality Competitiveness Index[2]	83.1	83.5	84.5	85.5
	Increased value-added rate of manufacturing	-	-	2 percentage points higher than in 2015	4 percentage points higher than in 2015
	Manufacturing labor productivity growth rate (%)	-	-	Around 7.5 (average annual growth rate during the 13th Five-Year Plan period)	Around 6.5 (average annual growth rate during the "14th Five-Year Plan")
Integration of industrialization and industrialization	Broadband penetration rate3 (%)	37	50	70	82
	Penetration rate of digital R&D design tools4 (%)	52	58	72	84
	Numerical control rate of key processes5 (%)	27	33	50	64
ECO development	Rate of decline in energy consumption per unit of industrial added value above designated size	-	-	18% decrease from 2015	34% decrease from 2015
	Decrease in carbon dioxide emissions per unit of industrial added value	-	-	22% decrease from 2015	40% drop from 2015
	Decrease in water consumption per unit of industrial added value	-	-	23% down from 2015	41% decrease from 2015
	Comprehensive utilization rate of industrial solid waste (%)	62	65	73	79

1 The number of effective invention patents per 100 million yuan of main business income of manufacturing enterprises above designated size = the number of effective invention patents of manufacturing enterprises above designated size / main business income of manufacturing enterprises above designated size.

2 Manufacturing Quality Competitiveness Index is an economic and technological comprehensive indicator that reflects the overall quality level of my country's manufacturing industry. It is calculated from a total of 12 specific indicators in terms of quality level and development capability.

3 The broadband penetration rate is represented by the fixed broadband household penetration rate, and the fixed broadband household penetration rate = the number of fixed broadband household users/the number of households.

4 Popularization rate of digital R&D design tools = number of enterprises above designated size applying digital R&D design tools/total number of enterprises above designated size (relevant data comes from 30,000 sample enterprises, the same below).

5 The numerical control rate of key processes is the average value of the numerical control rate of key processes of industrial enterprises above designated size.

3. Strategic tasks and key points To achieve the strategic goal of manufacturing a powerful country, we must adhere to problem orientation, make overall plans, and highlight key points; we must gather consensus from the whole society, accelerate the transformation and upgrading of the manufacturing industry, and comprehensively improve the quality of development and core competitiveness.

(1) Improve the innovation capability of the national manufacturing industry.

Improve the manufacturing innovation system with enterprises as the main body, market-oriented, and a combination of government, industry, education, research and application. Deploy innovation chains around the industrial chain, allocate resource chains around the innovation chain, strengthen key core technology research, accelerate the industrialization of scientific and technological achievements, and improve innovation capabilities in key links and key areas.

Strengthen the research and development of key core technologies. Strengthen the dominant position of enterprises in technological innovation, support enterprises in improving their innovation capabilities, promote the construction of national technological innovation demonstration enterprises and enterprise technology centers, and fully absorb enterprises to participate in the decision-making and implementation of national science and technology plans. Aiming at the country's major strategic needs and the commanding heights of future industrial development, regularly research, formulate and release roadmaps for technological innovation in key areas of manufacturing. Continue to implement major national science and technology projects as soon as possible, and support key core technology research and development through national science and technology plans (special projects, funds, etc.). Give play to the leading role of industry backbone enterprises and the basic role of colleges and universities and scientific research institutes, establish a number of industrial innovation alliances, carry out collaborative innovations in government, industry, academia, research and application, and overcome a number of industries that have an overall impact and driving force on the overall improvement of industrial competitiveness. Strong key common technologies to speed up the transformation of achievements.

Improve innovative design capabilities. Carry out innovative design demonstrations in key areas such as traditional manufacturing, strategic emerging industries, and modern service industries, and comprehensively promote the application of advanced design technologies featuring green, intelligent, and collaborative features. Strengthen the research and development of common key technologies in the field of design, overcome common technologies such as information design, process integration design, complex process and system design, develop a batch of key design tool software with independent intellectual property rights, and build and improve the innovative design ecosystem. Build a number of innovative design clusters with world influence, cultivate a group of professional and open industrial design enterprises, encourage OEM enterprises to establish research and design centers, and shift to OEM design and export of independent brand products. Develop various types of innovative design education, set up the National Industrial Design Award, and stimulate the enthusiasm and initiative of the whole society in innovative design.

Promote the industrialization of scientific and technological achievements. Improve the operation mechanism for the transformation of scientific and technological achievements, study and formulate guidelines for promoting the transformation and industrialization of scientific and technological achievements, establish and improve the information release and sharing platform for scientific and technological achievements, and improve the technology transfer and industrialization service system with the technology trading market as the core. Improve the incentive mechanism for the transformation of scientific and technological achievements, promote the reform of the use, disposal and income management of scientific and technological achievements in public institutions, and improve the scientific evaluation and market pricing mechanism for scientific and technological achievements. Improve the coordinated promotion mechanism for the transformation of scientific and technological achievements, guide government, industry, academia, research and application to strengthen cooperation in accordance with market laws and innovation laws, and encourage enterprises and social capital to establish a number of pilot test bases for technology integration,

maturation, and engineering. Accelerate the transformation and industrialization of national defense scientific and technological achievements, and promote the two-way transfer and transformation of military and civilian technology.

Improve the national manufacturing innovation system. Strengthen the top-level design, accelerate the establishment of a manufacturing innovation network with the innovation center as the core carrier, and the public service platform and engineering data center as the important support, establish a market-oriented innovation direction selection mechanism and a risk sharing and benefit sharing mechanism that encourages innovation. Make full use of existing scientific and technological resources, focus on the major common needs of the manufacturing industry, adopt new mechanisms and new models such as government-society cooperation, government-industry-university-research-application industrial innovation strategic alliances, and form a number of manufacturing innovation centers (industrial technology research bases) to carry out key Common major technology research and industrial application demonstration. Build a number of public service platforms to promote collaborative innovation in the manufacturing industry, standardize service standards, carry out professional services such as technology research and development, inspection and testing, technology evaluation, technology transactions, quality certification, and talent training, and promote the transformation and promotion of scientific and technological achievements. Build manufacturing engineering data centers in key areas to provide enterprises with innovative knowledge and open sharing services for engineering data. For the key common technologies of the manufacturing industry, build a number of major scientific research and experimental facilities, improve the system integration capabilities of core enterprises, and promote the extension to the high end of the value chain.

Column 1 Construction Project of Manufacturing Innovation Center (Industrial Technology Research Base)
Focusing on the transformation and upgrading of key industries and the major common needs of innovation and development in the fields of new-generation information technology, intelligent manufacturing, additive manufacturing, new materials, and biomedicine, a number of manufacturing innovation centers (industrial technology research bases) will be formed, focusing on the development of industry-based Research and development of common key technologies, industrialization of achievements, talent training, etc. Formulate and improve the standards and procedures for the selection, assessment, and management of manufacturing innovation centers. By 2020, focus on forming about 15 manufacturing innovation centers (industrial technology research bases), and strive to form about 40 manufacturing innovation centers (industrial technology research bases) by 2025.

Strengthen the construction of the standard system. Reform the standard system and standardization management system, organize the implementation of the manufacturing standardization improvement plan, and carry out comprehensive standardization work in key areas such as intelligent manufacturing. Give play to the important role of enterprises in standard formulation, support the establishment of standard promotion alliances in key areas, build standard innovation research bases, and coordinate product research and development and standard formulation. Formulate group standards that meet the needs of the market and innovation, and establish a self-declaration disclosure and supervision system for enterprise product and service standards. Encourage and support enterprises, scientific research institutes, industry organizations, etc. to participate in the formulation of international standards, and accelerate the internationalization of my country's standards. Vigorously promote the adoption of advanced civilian standards for national defense equipment, and promote the transformation and application of military technical standards to civilian fields. Do a good job in the promotion and implementation of standards, and vigorously promote the implementation of standards.

Strengthen the use of intellectual property rights. Strengthen intellectual property reserves of key core technologies in key areas of the manufacturing industry, and build an industrialization-oriented patent portfolio and strategic layout. Encourage and support enterprises to use intellectual property rights to participate in market competition, cultivate a group of advantageous enterprises with comprehensive intellectual property rights, support the establishment of intellectual property alliances, and promote the coordinated use of intellectual property rights by market players. Steadily promote the decryption and market-oriented application of national defense intellectual property rights. Establish and improve the intellectual property evaluation mechanism, encourage and support industry

backbone enterprises and professional institutions to cooperate in key areas to carry out patent evaluation, acquisition, operation, risk warning and response. Build a public service platform for the comprehensive use of intellectual property rights. Encourage transnational IP licensing. Research and formulate policy measures to reduce the cost of intellectual property application, protection and rights protection for small and medium-sized enterprises.

(2) Promote the deep integration of informatization and industrialization.

Accelerate the promotion of the integration of new generation information technology and manufacturing technology, and regard intelligent manufacturing as the main direction of the deep integration of the two; focus on the development of intelligent equipment and intelligent products, promote the intelligentization of the production process, cultivate new production methods, and comprehensively improve the enterprise's research and development, production, Intelligent level of management and service.

Research and formulate smart manufacturing development strategy. Compile the development plan for intelligent manufacturing, and clarify development goals, key tasks and major layouts. Accelerate the formulation of intelligent manufacturing technology standards, establish and improve the management standard system for intelligent manufacturing and the integration of industrialization and industrialization. Strengthen application traction, establish an intelligent manufacturing industry alliance, and jointly promote intelligent equipment and product research and development, system integration innovation and industrialization. Promote the comprehensive and integrated application of the industrial Internet, cloud computing, and big data in the entire process and the entire industry chain of enterprise R&D and design, manufacturing, operation management, and sales services. Strengthen the network security guarantee capacity building of the intelligent manufacturing industrial control system, and improve the comprehensive guarantee system.

Accelerate the development of intelligent manufacturing equipment and products. Organize the research and development of intelligent manufacturing equipment such as high-end CNC machine tools, industrial robots, additive manufacturing equipment, and intelligent production lines with deep perception, intelligent decision-making, and automatic execution functions, and make breakthroughs in new sensors, intelligent measuring instruments, industrial control systems, servo motors, and drives. Intelligent core devices such as reducers to promote engineering and industrialization. Accelerate the intelligent transformation of production equipment in machinery, aviation, shipbuilding, automobile, light industry, textile, food, electronics and other industries, and improve precision and agile manufacturing capabilities. Coordinate the layout and promote the R&D and industrialization of products such as intelligent vehicles, intelligent construction machinery, service robots, intelligent home appliances, intelligent lighting appliances, and wearable devices.

Promote intelligent manufacturing process. Pilot the construction of smart factories/digital workshops in key areas, accelerate the application of technologies and equipment such as human-computer intelligent interaction, industrial robots, intelligent logistics management, and additive manufacturing in the production process, and promote the simulation optimization, digital control, and status information of manufacturing processes Real-time monitoring and adaptive control. Accelerate the promotion and application of product life cycle management, customer relationship management, and supply chain management systems, promote the integration of key links such as group management and control, design and manufacturing, integration of production, supply and marketing, business and financial links, and realize intelligent management and control. Accelerate the construction of intelligent detection and supervision systems for key industries such as civilian explosives, hazardous chemicals, food, printing and dyeing, rare earths, and pesticides, and improve the level of intelligence.

Deepen the application of the Internet in the manufacturing field. Formulate a roadmap for the integrated development of the Internet and manufacturing, and clarify the development direction, goals and paths. Develop new manufacturing models such as Internet-based personalized customization, crowdsourcing design, and cloud manufacturing, and promote the formation of R&D, manufacturing, and industrial organization methods based on the dynamic perception of consumer demand. Establish an open industrial ecosystem with complementary advantages and win-win cooperation. Accelerate the development of Internet of Things technology research and development and application demonstration, and cultivate new industrial Internet applications such as intelligent monitoring, remote diagnosis management, and traceability of the entire industrial chain. Implement pilot projects for innovative applications of industrial cloud and industrial big data, build a number of high-quality industrial cloud services and industrial big data platforms, and promote the open sharing of software and services, design and manufacturing resources, key technologies and standards.

Strengthen the construction of Internet infrastructure. Strengthen the planning and layout of industrial Internet infrastructure construction, and build an industrial Internet with low latency, high reliability, and wide coverage. Accelerate the deployment and construction of optical fiber networks, mobile communication networks, and wireless local area networks in manufacturing agglomeration areas, realize the broadband upgrade of information networks, and improve the broadband access capabilities of enterprises. In response to cyber-physical system network research and development and application requirements, organize the development of intelligent control systems, industrial application software, fault diagnosis software and related tools, sensing and communication system protocols, and realize real-time communication, accurate identification, effective interaction and communication between people, equipment and products. intelligent control.

Column 2 Intelligent Manufacturing Engineering
Closely focus on key links in key manufacturing fields, and carry out integrated innovation and engineering applications of the integration of new generation information technology and manufacturing equipment. Support government-industry-university-research-application joint research, develop smart products and self-controllable smart devices and realize industrialization. Relying on superior enterprises, focusing on the intelligentization of key processes, the replacement of key positions by robots, the intelligent optimization control of the production process, and the optimization of the supply chain, build smart factories/digital workshops in key areas. In key areas, industries, and enterprises with good basic conditions and urgent needs, implement pilot demonstrations and application promotions of process manufacturing, discrete manufacturing, intelligent equipment and products, new business forms and models, intelligent management, and intelligent services. Establish an intelligent manufacturing standard system and information security system, and build an intelligent manufacturing network system platform. By 2020, the level of intelligence in key areas of the manufacturing industry will be significantly improved, the operating cost of pilot demonstration projects will be reduced by 30%, the product production cycle will be shortened by 30%, and the rate of defective products will be reduced by 30%. By 2025, the key areas of the manufacturing industry will be fully intelligent, the operating costs of pilot demonstration projects will be reduced by 50%, the product production cycle will be shortened by 50%, and the rate of defective products will be reduced by 50%.

(3) Strengthening industrial basic capabilities.

Weakness in industrial basic capabilities such as core basic components (components), advanced basic technology, key basic materials, and industrial technology foundation (hereinafter collectively referred to as "four basics") is the crux of the problem that restricts the innovation, development and quality improvement of my country's manufacturing industry. We must adhere to the principles of problem orientation, integration of production and demand, collaborative innovation, and key breakthroughs, and strive to break the bottleneck that restricts the development of key industries.

Make overall plans to promote the development of the "four bases". Formulate an implementation plan for strengthening the industrial base, and clarify key directions, main objectives and implementation paths. Formulate the guidance catalog for the development of the "four bases" of industry, issue a report on the development of a strong industrial base, and organize the implementation of a strong industrial base project. Coordinate military and civilian resources, carry out joint research on dual-use technologies, support the mutual effective use of military and civilian technologies, and promote the integrated development of basic fields. Strengthen the construction of standards and measurement systems in basic fields, speed up the implementation of standards and standards, and improve the quality, reliability and lifespan of basic products. Establish a multi-sectoral coordination promotion mechanism to guide various elements to gather in basic fields.

Strengthen the "four bases" innovation capacity building. Strengthen forward-looking basic research, and focus on solving key common technologies that affect the performance and stability of core basic components (components) products. Establish a basic process innovation system, use existing resources to establish key common basic process

research institutions, and carry out joint research on key manufacturing processes such as advanced molding and processing; support enterprises to carry out process innovation, and cultivate process professionals. Increase the research and development of basic special materials, and improve the self-sufficiency guarantee ability and preparation technology level of special materials. Establish a national industrial base database, and strengthen the collection, management, application and accumulation of enterprise test and measurement data and measurement data. Increase support for technology research and development in the "four basics" field, and guide industrial investment funds and venture capital funds to invest in key projects in the "four basics" field.

Promote the coordinated development of complete machine enterprises and "four bases" enterprises. Focus on demand-side incentives, combine production and application, and coordinate research. Relying on national science and technology plans (special projects, funds, etc.) Docking, establishing industrial alliances, forming a new model of collaborative innovation, combination of production and application, and promoting the development of basic industries through the market, and improving the independent controllability of major equipment. Carry out the demonstration application of industrial strong foundation, improve the first (set) and first batch of policies, and support the popularization and application of core basic parts (components), advanced basic technology, and key basic materials.

Column 3 Industrial Strong Foundation Project
Carry out demonstration applications, establish reward and risk compensation mechanisms, and support the first batch or cross-field applications of core basic components (components), advanced basic technologies, and key basic materials. Organize key breakthroughs, aiming at the urgent needs of key technologies and products for major projects and key equipment, support advantageous enterprises to carry out joint government-industry-university-research-application research, and break through the engineering and industrialization bottlenecks of key basic materials and core basic components. Strengthen platform support, lay out and establish a number of "four bases" research centers, create a number of public service platforms, and improve the technology infrastructure system of key industries. By 2020, 40% of the core basic components and key basic materials will be independently guaranteed, and the situation of being controlled by others will gradually ease. Industries such as aerospace equipment, communication equipment, power generation and power transmission and transformation equipment, construction machinery, rail transit equipment, and household appliances are in urgent need of Advanced manufacturing processes for core basic parts (components) and key basic materials have been popularized and applied. By 2025, 70% of the core basic components and key basic materials will be independently guaranteed, 80 iconic advanced technologies will be promoted and applied, and some will reach the international leading level. An industrial innovation development pattern that coordinates and interacts with basic support.

(4) Strengthen quality brand building.

Improve quality control technology, improve quality management mechanism, consolidate the foundation of quality development, optimize the environment for quality development, and strive to achieve a substantial improvement in the quality of manufacturing. Encourage enterprises to pursue excellent quality, form brand-name products with independent intellectual property rights, and continuously improve corporate brand value and the overall image of Made in China.

Promote advanced quality management techniques and methods. Build a key product standard compliance certification platform, and promote key product technology and safety standards to fully reach the international advanced level. Carry out quality benchmarking and leading enterprise demonstration activities, popularize advanced production management models and methods such as excellent performance, Six Sigma, lean production, quality diagnosis, and continuous quality improvement. Support enterprises to improve quality online monitoring, online control and product life cycle quality traceability. Organize and carry out process optimization actions in key industries to improve the control level of key processes. Demonstration and promotion of mass quality management activities such as quality management groups and on-site improvement. Strengthen the quality management of small and medium-sized enterprises, and carry out quality and safety training, diagnosis and counseling activities.

Accelerate the improvement of product quality. Implement the action plan for improving the quality of industrial

products, and organize to overcome a number of long-term problems in key industries such as automobiles, high-end CNC machine tools, rail transit equipment, large-scale complete sets of technical equipment, construction machinery, special equipment, key raw materials, basic parts, and electronic components The key common quality technology for product quality improvement, strengthen the development and application of reliability design, test and verification technology, promote the use of advanced molding and processing methods, online testing devices, intelligent production and logistics systems and testing equipment, etc., so that the performance of key physical products Stability, quality reliability, environmental adaptability, service life and other indicators have reached the international advanced level of similar products. Implement quality management, quality self-declaration and quality traceability systems covering the entire life cycle of products in the fields of food, medicine, baby products, and home appliances to ensure the quality and safety of key consumer products. Vigorously improve the quality and reliability of national defense equipment, and enhance the actual combat capabilities of national defense equipment.

Improve the quality supervision system. Improve the product quality standard system, policy planning system and quality management laws and regulations. Strengthen industry access and market exit management in key areas related to people's livelihood and security. Establish a compulsory reporting system for product accidents of consumer goods production and operation enterprises, improve the quality credit information collection and release system, and strengthen the main responsibility of enterprises for quality. Make quality violation records an important part of corporate integrity ratings, establish a quality blacklist system, and intensify crackdowns and punishments on quality violations and counterfeit brands. Establish regional and industry quality and safety early warning systems to prevent and resolve product quality and safety risks. Strictly implement the product "three guarantees", product recall and other systems. Strengthen supervision and inspection and accountability to effectively protect the rights and interests of consumers.

Lay a solid foundation for quality development. Formulate and implement manufacturing quality, safety, sanitation, environmental protection and energy-saving standards that are in line with international advanced levels. Strengthen the research on the basis of measurement technology and cutting-edge technology, establish a batch of high-accuracy and high-stability measurement base standards that are urgently needed for the development of the manufacturing industry, and improve the country's ability to trace the source of production related to the manufacturing industry. Strengthen the construction of the national industrial metrology and testing center, and build a national metrology technology innovation system. Improve the inspection and testing technology guarantee system, build a number of high-level industrial product quality control and technical evaluation laboratories, and product quality supervision and inspection centers, and encourage the establishment of professional testing technology alliances. Improve the certification and accreditation management model, improve the effectiveness of compulsory product certification, promote the healthy development of voluntary product certification, improve the level of management system certification, and steadily promote international mutual recognition. Support industry organizations to issue self-regulatory norms or conventions, and carry out quality and reputation commitment activities.

Promote manufacturing brand building. Guide enterprises to formulate a brand management system, focus on the whole process of R&D innovation, manufacturing, quality management and marketing services, improve internal quality, and lay a solid foundation for brand development. Support a group of professional service organizations for brand cultivation and operation, and provide services such as brand management consulting and marketing promotion. Improve the registration and management system of collective trademarks and certification trademarks. Create a group of regional brands of industrial clusters with distinctive features, strong competitiveness, and good market reputation. Build brand culture, guide enterprises to enhance brand awareness with quality and reputation as the core, establish brand consumption concepts, and enhance brand added value and soft power. Accelerate the internationalization process of my country's brand value evaluation, give full play to the role of various media, increase the promotion of Chinese brands, and establish a good image of Chinese-made brands.

(5) Fully promote green manufacturing.

Increase the research and development of advanced energy-saving and environmental protection technologies, processes and equipment, and accelerate the green transformation and upgrading of the manufacturing industry. , clean, low-carbon and circular green manufacturing system.

Accelerate the green transformation and upgrading of the manufacturing industry. Comprehensively promote the green transformation of traditional manufacturing industries such as iron and steel, nonferrous metals, chemicals, building materials, light industry, printing and dyeing, vigorously develop and promote waste heat and pressure recovery, water recycling, reduction of heavy metal pollution, replacement of toxic and harmful raw materials, recycling of waste

residue, desulfurization, denitrification and dust removal and other green process technology and equipment, and accelerate the application of clean and efficient casting, forging, welding, surface treatment, cutting and other processing technologies to achieve green production. Strengthen the R&D and application of green products, promote technologies such as light weight, low power consumption, and easy recycling, continue to improve the energy efficiency of end-use products such as motors, boilers, internal combustion engines, and electrical appliances, and accelerate the elimination of outdated electromechanical products and technologies. Actively lead the green development of emerging industries from a high starting point, significantly reduce the production and use of electronic information products, energy consumption and the content of restricted substances, build green data centers and green base stations, and vigorously promote the green and low-carbon development of new materials, new energy, high-end equipment, and biological industries .

Promote efficient recycling of resources. Support enterprises to strengthen technological innovation and management, enhance green and lean manufacturing capabilities, and significantly reduce energy consumption, material consumption and water consumption. Continue to increase the utilization ratio of green and low-carbon energy, carry out the construction of distributed green smart micro-grids in industrial parks and enterprises, and control and reduce the consumption of fossil energy. Fully implement circular production methods to promote link symbiosis, mutual supply of raw materials, and resource sharing among enterprises, parks, and industries. Promote the standardized and large-scale development of the resource recycling industry, strengthen technical and equipment support, and improve the comprehensive utilization level of bulk industrial solid waste, scrap metal, and waste electrical and electronic products. Vigorously develop the remanufacturing industry, implement high-end remanufacturing, intelligent remanufacturing, and in-service remanufacturing, promote product certification, and promote the sustainable and healthy development of the remanufacturing industry.

Actively build a green manufacturing system. Support enterprises to develop green products, implement ecological design, significantly improve the energy-saving, environmental protection and low-carbon level of products, and guide green production and green consumption. Build green factories to realize intensification of workshops, harmless raw materials, clean production, recycling of waste, and low-carbon energy. Develop green parks, promote industrial coupling in industrial parks, and achieve near-zero emissions. Create a green supply chain, accelerate the establishment of a resource-saving and environment-friendly procurement, production, marketing, recycling and logistics system, and implement the extended producer responsibility system. Strengthen green enterprises and support enterprises to implement green strategies, green standards, green management and green production. Strengthen green supervision, improve energy conservation and environmental protection laws and standards system, strengthen energy conservation and environmental protection supervision, implement corporate social responsibility reporting system, and carry out green evaluation.

Column 4 Green Manufacturing Engineering
Organize the implementation of special technological transformations such as energy efficiency improvement, cleaner production, water conservation and pollution control, and recycling of traditional manufacturing industries. Carry out demonstrations of major energy conservation and environmental protection, comprehensive utilization of resources, remanufacturing, and industrialization of low-carbon technologies. Implement plans to improve clean production levels in key areas, river basins, and industries, and solidly promote special projects for the prevention and control of air, water, and soil pollution at the source. Formulate standard systems for green products, green factories, green parks, and green enterprises, and carry out green evaluations. By 2020, 1,000 green demonstration factories and 100 green demonstration parks will be built, energy and resource consumption in some heavy chemical industries will reach an inflection point, and the emission intensity of major pollutants in key industries will be reduced by 20%. By 2025, the green development of the manufacturing industry and the unit consumption of major products will reach the world's advanced level, and a green manufacturing system will be basically established.

(6) Vigorously promote breakthrough development in key areas.

Aim at strategic priorities such as new-generation information technology, high-end equipment, new materials, and

biomedicine, guide the gathering of various social resources, and promote the rapid development of advantageous and strategic industries.

1. A new generation of information technology industry.

Integrated circuits and special equipment. Focus on improving the level of integrated circuit design, continuously enrich intellectual property (IP) cores and design tools, break through the core general-purpose chips that are related to national information and network security and the development of the electronic machine industry, and improve the application adaptation capabilities of domestic chips. Master high-density packaging and three-dimensional (3D) micro-assembly technology, and improve the independent development capabilities of the packaging industry and testing. Form key manufacturing equipment supply capabilities.

Information and communication equipment. Master core technologies such as new computing, high-speed interconnection, advanced storage, and systematic security assurance, and make comprehensive breakthroughs in fifth-generation mobile communication (5G) technology, core routing and switching technology, ultra-high-speed and large-capacity intelligent optical transmission technology, and "future network" core technologies and system architecture, and actively promote the development of quantum computing and neural networks. Research and develop high-end servers, large-capacity storage, new routing switches, new smart terminals, new generation base stations, network security and other equipment, and promote the systematic development and large-scale application of core information and communication equipment.

Operating systems and industrial software. Develop industrial basic software such as operating systems in the security field. Make breakthroughs in high-end industrial software core technologies such as intelligent design and simulation and its tools, manufacturing IoT and services, and industrial big data processing, develop independent and controllable high-end industrial platform software and application software in key areas, and establish and improve industrial software integration standards and safety assessments system. Promote the systematic development and industrial application of independent industrial software.

2. High-end CNC machine tools and robots.

High-end CNC machine tools. Develop a batch of precision, high-speed, high-efficiency, flexible CNC machine tools and basic manufacturing equipment and integrated manufacturing systems. Accelerate the research and development of cutting-edge technologies and equipment such as high-end CNC machine tools and additive manufacturing. Focusing on improving reliability and precision retention, develop high-end CNC systems, servo motors, bearings, gratings and other main functional components and key application software to accelerate industrialization. Strengthen user process verification capacity building.

robot. Focusing on the application requirements of industrial robots such as automobiles, machinery, electronics, dangerous goods manufacturing, national defense and military industry, chemical industry, light industry, and special robots, as well as service robots such as medical care, home services, education and entertainment, actively develop new products, and promote robot standardization and modules development and expand market applications. Break through technical bottlenecks such as robot body, reducer, servo motor, controller, sensor and driver and other key components and system integration design and manufacture.

3. Aerospace equipment.

aviation equipment. Accelerate the development of large aircraft, start the development of wide-body passenger aircraft at an appropriate time, and encourage international cooperation in the development of heavy-duty helicopters; promote the industrialization of trunk and regional aircraft, helicopters, unmanned aerial vehicles, and general-purpose aircraft. Make breakthroughs in high thrust-to-weight ratio, advanced turboprop (shaft) engines and large bypass ratio turbofan engine technologies, and establish an industrial system for independent development of engines. Develop advanced airborne equipment and systems to form an independent and complete aviation industry chain.

Aerospace equipment. Develop a new generation of launch vehicles and heavy-duty launch vehicles to enhance the ability to enter space. Accelerate the construction of national civil space infrastructure, develop new satellite and other space platforms and payloads, and space-to-ground broadband Internet systems, and form long-term, sustainable and stable satellite remote sensing, communication, navigation and other space information service capabilities. Promote manned spaceflight and lunar exploration projects, and moderately develop deep space exploration. Promote the transformation of aerospace technology and the application of space technology.

4. Marine engineering equipment and high-tech ships. Vigorously develop deep-sea exploration, resource development and utilization, offshore operation support equipment and its key systems and special equipment. Promote the development and engineering of deep sea space stations and large floating structures. Form comprehensive testing,

testing and identification capabilities for marine engineering equipment, and improve the level of marine development and utilization. Make breakthroughs in the design and construction technology of luxury cruise ships, comprehensively enhance the international competitiveness of high-tech ships such as liquefied natural gas ships, and master the core technologies of integrated, intelligent, and modular design and manufacture of key supporting equipment.

5. Advanced rail transit equipment. Accelerate the application of new materials, new technologies and new processes, focus on breakthroughs in systematic safety assurance, energy conservation and environmental protection, digital, intelligent and networked technologies, and develop advanced, reliable and applicable products as well as lightweight, modular and genealogical products. Research and develop a new generation of green intelligent, high-speed and heavy-duty rail transit equipment systems, provide users with overall solutions around the entire life cycle of the system, and establish a world-leading modern rail transit industry system.

6. Energy saving and new energy vehicles. Continue to support the development of electric vehicles and fuel cell vehicles, master the core technologies of low-carbonization, informatization, and intelligence of automobiles, and improve the engineering and industrialization of core technologies such as power batteries, drive motors, high-efficiency internal combustion engines, advanced transmissions, lightweight materials, and intelligent control It will form a complete industrial system and innovation system from key components to complete vehicles, and promote self-owned brand energy-saving and new energy vehicles to be in line with the international advanced level.

7. Power equipment. Promote the industrialization and demonstration application of large-scale high-efficiency and ultra-clean emission coal-fired power units, and further improve the manufacturing level of ultra-large-capacity hydropower units, nuclear power units, and heavy-duty gas turbines. Promote the development of new energy and renewable energy equipment, advanced energy storage devices, power transmission and transformation for smart grids, and user-end equipment. Make breakthroughs in the manufacturing and application technologies of key components and materials such as high-power power electronic devices and high-temperature superconducting materials, and form industrialization capabilities.

8. Agricultural machinery and equipment. Focus on the development of advanced agricultural machinery and equipment used in major production processes such as grain, cotton, oil, sugar and other bulk grains and strategic economic crops such as breeding, plowing, planting, management, harvesting, transportation, and storage, and accelerate the development of large tractors and their compound operating tools, Large high-efficiency combine harvesters and other high-end agricultural equipment and key core components. Improve the information collection, intelligent decision-making and precise operation capabilities of agricultural machinery and equipment, and promote the formation of an overall informatization solution for agricultural production.

9. New materials. Focus on the development of special metal functional materials, high-performance structural materials, functional polymer materials, special inorganic non-metallic materials and advanced composite materials, and accelerate the research and development of advanced smelting, solidification molding, vapor deposition, profile processing, high-efficiency synthesis and other new material preparations Key technologies and equipment, strengthen basic research and system construction, and break through the bottleneck of industrial production. Actively develop special new materials shared by the military and civilians, accelerate the two-way transfer and transformation of technology, and promote the integrated development of the military and civilians in the new material industry. Pay close attention to the impact of disruptive new materials on traditional materials, and plan and develop strategic frontier materials such as superconducting materials, nanomaterials, graphene, and bio-based materials in advance. Accelerate the upgrading of basic materials.

10. Biomedicine and high-performance medical devices. Develop chemical drugs, traditional Chinese medicines, and new biotechnology drug products for major diseases, focusing on new mechanisms and new target chemical drugs, antibody drugs, antibody-drug conjugates, new structural protein and peptide drugs, new vaccines, and innovations with outstanding clinical advantages Traditional Chinese medicine and personalized medicine. Improve the innovation capability and industrialization level of medical devices, focus on the development of high-performance diagnostic and treatment equipment such as imaging equipment and medical robots, high-value medical consumables such as fully degradable vascular stents, and mobile medical products such as wearables and remote diagnosis and treatment. Realize the breakthrough and application of new technologies such as biological 3D printing and induced pluripotent stem cells.

Column 5 High-end equipment innovation project

Organize and implement a number of innovations in large aircraft, aero engines and gas turbines, civil aerospace, intelligent green trains, energy-saving and new energy vehicles, marine engineering equipment and high-tech ships, smart grid complete sets of equipment, high-end CNC machine tools, nuclear power equipment, and high-end diagnostic and treatment equipment And industrialization special projects and major projects. Develop a number of iconic and driving key products and major equipment, improve the level of independent design and system integration capabilities, break through common key technologies and bottlenecks in engineering and industrialization, organize application pilots and demonstrations, and improve innovation and development capabilities and international Competitiveness, seize the commanding heights of competition.

By 2020, independent research and development and application will be achieved in the above fields. By 2025, the market share of high-end equipment with independent intellectual property rights will be greatly increased, the dependence of core technologies on foreign countries will be significantly reduced, the basic supporting capabilities will be significantly enhanced, and equipment in important fields will reach the international leading level.

(7) Deeply promote the structural adjustment of the manufacturing industry.

Promote the development of traditional industries to the mid-to-high end, gradually resolve excess capacity, promote the coordinated development of large enterprises and small and medium-sized enterprises, and further optimize the layout of the manufacturing industry.

Continue to promote technological transformation of enterprises. Clarify the policy direction of supporting major strategic projects and high-end equipment to carry out technological transformation, stabilize the scale of central technological transformation guidance funds, and establish a long-term mechanism to support technological transformation of enterprises through discount interest and other means. Promote legislation related to technological transformation, strengthen the incentive and restraint mechanism, and improve the policy system for promoting technological transformation of enterprises. Support key industries, high-end products, and key links to carry out technological transformation, guide enterprises to adopt advanced and applicable technologies, optimize product structure, comprehensively improve design, manufacturing, technology, and management levels, and promote steel, petrochemical, construction machinery, light industry, textiles and other industries to High-end development of the value chain. Research and formulate investment guidelines for technological transformation of key industries and key project-oriented plans, attract social capital to participate, and optimize the industrial investment structure. Focusing on the transformation of traditional fields such as the integration of industrialization and industrialization, energy conservation and consumption reduction, quality improvement, and safe production, popularize and apply new technologies, new processes, new equipment, and new materials to improve the production technology level and efficiency of enterprises.

Steadily resolve the contradiction of overcapacity. Strengthen and improve macro-control, follow the principle of "digesting a batch, transferring a batch, integrating a batch, and eliminating a batch", implement policies by industry and classification, and effectively resolve the contradiction of overcapacity. Strengthen industry norms and access management, promote enterprises to upgrade their technical equipment, and optimize stock production capacity. Strengthen the dynamic monitoring and analysis of industries with severe excess capacity, establish and improve early warning mechanisms, and guide enterprises to actively withdraw from industries with excess capacity. Effectively bring into play the role of the market mechanism, and comprehensively use legal, economic, technical and necessary administrative means to accelerate the elimination of backward production capacity.

Promote the coordinated development of large and medium-sized enterprises. Strengthen the dominant position of enterprises in the market, support strategic cooperation among enterprises and cross-industry and cross-regional mergers and acquisitions, improve the level of large-scale and intensive operation, and cultivate a group of enterprise groups with strong core competitiveness. Stimulate the entrepreneurial and innovative vitality of small and medium-sized enterprises, and develop a group of specialized "little giant" enterprises with outstanding main business, strong competitiveness, good growth, and focus on market segments. Give full play to the demonstration role

of Chinese and foreign SME cooperation parks, and use bilateral and multilateral SME cooperation mechanisms to support SMEs going global and bringing them in. Guide large enterprises and small and medium-sized enterprises to establish a cooperative relationship of collaborative innovation and win-win cooperation through various methods such as professional division of labor, service outsourcing, and order production. Promote the construction of a number of high-level small and medium-sized enterprise clusters.

Optimize the development layout of the manufacturing industry. Implement the overall national regional development strategy and the planning of major functional areas, comprehensively consider factors such as resources and energy, environmental capacity, and market space, formulate and implement key industry layout plans, and adjust and optimize the layout of major productivity. Improve the industrial transfer guidance catalog, build a national industrial transfer information service platform, create a number of industrial transfer demonstration parks, guide the rational and orderly transfer of industries, and promote the coordinated development of the eastern, central and western manufacturing industries. Actively promote the coordinated development of industries in the Beijing-Tianjin-Hebei region and the Yangtze River Economic Belt. In accordance with the requirements of new industrialization, transform and upgrade the existing manufacturing agglomeration areas, and promote the transformation and upgrading of industrial agglomerations to industrial clusters. Build a group of new industrialization demonstration bases with outstanding characteristics and advantages, efficient industrial chain coordination, strong core competitiveness, and a sound public service system.

(8) Actively develop service-oriented manufacturing and producer services.

Accelerate the coordinated development of manufacturing and services, promote business model innovation and format innovation, and promote the transformation from production-oriented manufacturing to service-oriented manufacturing. Vigorously develop the producer service industry closely related to the manufacturing industry, and promote the construction of service function areas and service platforms.

Promote the development of service-oriented manufacturing. Research and formulate guidelines for promoting the development of service-oriented manufacturing, and implement the action plan for service-oriented manufacturing. Carry out pilot demonstrations, guide and support manufacturing enterprises to extend the service chain, and shift from mainly providing product manufacturing to providing products and services. Encourage manufacturing enterprises to increase investment in service links, develop personalized customized services, full life cycle management, network precision marketing and online support services, etc. Support qualified enterprises to change from providing equipment to providing system integration general contracting services, from providing products to providing overall solutions. Encourage superior manufacturing enterprises to "fission" their professional advantages, and provide socialized and professional services to the industry through business process reengineering. Support qualified manufacturing enterprises to establish financial institutions such as corporate finance companies and financial leasing companies, and promote financial leasing services such as large-scale manufacturing equipment and production lines.

Accelerate the development of productive service industry. Vigorously develop information technology services for the manufacturing industry, and improve the program design, development, and comprehensive integration capabilities of information application systems in key industries. Encourage Internet and other enterprises to develop innovative models such as mobile e-commerce, online customization, and online-to-offline, actively develop services such as dynamic monitoring and forecasting and early warning of products and markets, realize seamless connection with manufacturing enterprises, and innovate business collaboration processes and value creation models. Accelerate the development of scientific and technological service industries such as R&D and design, technology transfer, business incubation, intellectual property rights, and scientific and technological consulting; Producer services such as brand building will improve the ability to support the transformation and upgrading of the manufacturing industry.

Strengthen the construction of service function areas and public service platforms. Construct and upgrade the productive service industry functional area, focus on the development of modern service industries such as R&D and design, information, logistics, business, and finance, and enhance the radiation capacity. Relying on the manufacturing agglomeration area, build a number of public service platforms for producer services. Encourage enterprises in the eastern region to accelerate the service-oriented transformation of the manufacturing industry and establish production service bases. Support the development of distinctive and competitive producer service industries in the central and western regions, accelerate the construction of supporting service facilities and capacity in industrial transfer undertaking areas, and realize the coordinated development of manufacturing and service industries.

(9) Improve the international development level of the manufacturing industry.

Coordinate the use of two resources and two markets, implement a more active opening strategy, better combine the introduction and going out, expand new open areas and spaces, improve the level and level of international cooperation, and promote the internationalization of key industries. Guide enterprises to improve their international competitiveness.

Improve the utilization of foreign capital and the level of international cooperation. Further liberalize the general manufacturing industry, optimize the open structure, and increase the level of openness. Guide foreign capital to invest in new-generation information technology, high-end equipment, new materials, biomedicine and other high-end manufacturing fields, and encourage foreign companies and scientific research institutions to set up global R&D institutions in my country. Support qualified enterprises to issue stocks and bonds overseas, and encourage various forms of technical cooperation with overseas enterprises.

Enhance transnational operation capabilities and international competitiveness. Support the development of a group of multinational companies, and accelerate the improvement of core competitiveness through global resource utilization, business process reengineering, industrial chain integration, and capital market operations. Support enterprises to carry out overseas mergers and acquisitions, equity investment, venture capital investment, establish R&D centers, experimental bases, and global marketing and service systems; rely on the Internet to carry out network collaborative design, precision marketing, value-added service innovation, media brand promotion, etc., to establish a global industrial chain system , Improve international operation capabilities and service levels. Encourage advantageous enterprises to accelerate the development of international general contracting and general integration. Guide enterprises to integrate into local culture, enhance awareness of social responsibility, strengthen investment and business risk management, and improve overseas localization capabilities of enterprises.

Deepen industrial international cooperation and accelerate enterprises going global. Strengthen the top-level design, formulate the overall strategy for the development of the manufacturing industry, and establish and improve the overall coordination mechanism. Actively participate in and promote international industrial cooperation, implement major strategic deployments such as the Silk Road Economic Belt and the 21st Century Maritime Silk Road, accelerate the construction of interconnection infrastructure with neighboring countries, and deepen industrial cooperation. Give full play to the advantages of opening up along the border, and build a number of overseas manufacturing cooperation parks in countries and regions where conditions permit. Adhere to government promotion and enterprise leadership, innovate business models, and encourage the transfer of high-end equipment, advanced technology, and superior production capacity to overseas. Strengthen policy guidance, promote industrial cooperation from processing and manufacturing to high-end links such as cooperative research and development, joint design, marketing, and brand cultivation, and improve the level of international cooperation. Innovate the processing trade model, extend the domestic value-added chain of processing trade, and promote the transformation and upgrading of processing trade.

4. Strategic Support and Guarantee

To build a strong manufacturing country, we must give full play to our institutional advantages, mobilize all forces, further deepen reforms, improve policies and measures, establish flexible and efficient implementation mechanisms, and create a good environment; we must cultivate a culture of innovation and manufacturing with Chinese characteristics, and promote the transformation of the manufacturing industry from large to strong .

(1) Deepen system and mechanism reform.

Comprehensively promote law-based administration, accelerate the transformation of government functions, innovate government management methods, strengthen the formulation and implementation of manufacturing development strategies, plans, policies, and standards, strengthen industry self-discipline and public service capacity building, and improve the level of industrial governance. Streamline administration and decentralize power, deepen the reform of the administrative approval system, standardize approval items, simplify procedures, and clarify time limits; timely revise the catalog of investment projects approved by the government, and ensure that enterprises are the main investors. Improve the government-industry-university-research-use collaborative innovation mechanism, reform the technological innovation management system and mechanism, project fund allocation, achievement evaluation and transformation mechanism, promote the capitalization and industrialization of scientific and technological achievements, and stimulate the innovation vitality of the manufacturing industry. Accelerate the market-oriented reform of the prices of production factors, improve the mechanism that mainly determines prices by the market, and rationally allocate public resources; promote the reform of energy-saving energy, carbon emission rights, pollution emission rights, and water rights trading systems, speed up the ad valorem collection of resource taxes, and promote

environmental protection Tax instead of fee. Deepen the reform of state-owned enterprises, improve the corporate governance structure, develop the mixed-ownership economy in an orderly manner, further break up various forms of industry monopoly, and cancel unreasonable restrictions on the non-public economy. Steadily promote the reform of national defense science and technology industry, and promote the in-depth development of military-civilian integration. Improve the industrial security review mechanism and legal system, and strengthen the security review of investment and financing, mergers and acquisitions, bidding and procurement in important areas of manufacturing that are related to the lifeline of the national economy and national security.

(2) Create a fair competition market environment.

Deepen the reform of the market access system, implement negative list management, strengthen interim and ex-post supervision, and comprehensively clean up and abolish policies and measures that are not conducive to the construction of a unified national market. Implement a scientific and standardized industry access system, formulate and improve energy-saving, land-saving, water-saving, environmental protection, technology, safety and other access standards for the manufacturing industry, strengthen supervision and inspection of the implementation of national mandatory standards, uniform law enforcement, and guide enterprises with market-oriented means Carry out structural adjustment and transformation and upgrading. Effectively strengthen supervision, crack down on the production and sale of counterfeit and shoddy products, severely punish market monopoly and unfair competition, and create a good production and operation environment for enterprises. Accelerate the development of the technology market and improve the mechanism for the creation, use, management and protection of intellectual property rights. Improve the policies and measures related to the elimination of backward production capacity, such as employee placement, debt settlement, and enterprise conversion, and improve the market exit mechanism. Further reduce the burden on enterprises, implement the enterprise-related fee list system, establish a national enterprise-related fee project database, ban all kinds of unreasonable fees and apportionments, and strengthen supervision, inspection and accountability. Promote the construction of a credit system for manufacturing companies, build a China-made credit database, and establish and improve mechanisms for dynamic evaluation of corporate credit, incentives for keeping promises, and punishment for breaking promises. Strengthen the construction of corporate social responsibility, and implement corporate product standards, quality, safety self-declaration and supervision systems.

(3) Improve financial support policies.

Deepen the reform of the financial sector, broaden the financing channels of the manufacturing industry, and reduce financing costs. Actively leverage the advantages of policy-based finance, development-oriented finance and commercial finance, and increase support for key areas such as new-generation information technology, high-end equipment, and new materials. Support the Export-Import Bank of China to increase its services for the manufacturing industry to go global within the scope of its business, encourage the China Development Bank to increase loans to manufacturing enterprises, and guide financial institutions to innovate products and businesses that meet the characteristics of manufacturing enterprises. Improve the multi-level capital market, promote the standardized development of regional equity markets, and support qualified manufacturing companies to go public at home and abroad for financing and issue various debt financing instruments. Guide venture capital, private equity investment, etc. to support the innovation and development of manufacturing enterprises. Encourage qualified manufacturing loans and leased assets to carry out pilot securitization. Support large-scale manufacturing enterprise groups in key areas to carry out pilot projects of integration of industry and finance, and promote the transformation and upgrading of manufacturing through financial leasing. Explore and develop insurance products and services suitable for the development of the manufacturing industry, and encourage the development of loan guarantee insurance and credit insurance businesses. On the premise of controllable risks and sustainable business, increase support for manufacturing enterprises to carry out resource exploration and development overseas, set up R&D centers and high-tech Support for enterprises and mergers and acquisitions.

(4) Increase fiscal and tax policy support.

Make full use of existing channels, strengthen the support of financial funds for the manufacturing industry, and focus on investing in key areas of manufacturing transformation and upgrading such as intelligent manufacturing, "four bases" development, and high-end equipment, so as to create a favorable policy environment for the development of the manufacturing industry. Use the public-private partnership (PPP) model to guide social capital to participate in the construction of major manufacturing projects, technological transformation of enterprises and key infrastructure construction. Innovate financial fund support methods, gradually shift from "supplementary construction" to "supplementary operation", and improve the efficiency of financial fund use. Deepen the management reform of

scientific and technological plans (special projects, funds, etc.), support scientific and technological research and development and demonstration applications in key areas of the manufacturing industry, and promote technological innovation, transformation and upgrading, and structural layout adjustment of the manufacturing industry. Improve and implement government procurement policies that support innovation, and promote the development and large-scale application of innovative products in the manufacturing industry. Implement and improve incentive policies such as the use of the first (set) of major technical equipment, and improve the incentive and restraint mechanisms for research and development and use units in product innovation, value-added services, and demonstration applications. Implement tax policies that are conducive to the transformation and upgrading of the manufacturing industry, promote the reform of value-added tax, improve the calculation method of enterprise research and development expenses, and effectively reduce the tax burden of manufacturing enterprises.

(5) Improve the multi-level talent training system.

Strengthen the overall planning and classification guidance for the development of manufacturing talents, organize and implement the manufacturing talent training plan, increase the training of professional and technical talents, management talents and skilled talents, and improve the talent training system from research and development, transformation, production to management. With the improvement of modern management level and enterprise competitiveness as the core, implement the quality improvement project of enterprise management personnel and the national small and medium-sized enterprise Galaxy training project, and cultivate a group of outstanding entrepreneurs and high-level management personnel. Focusing on high-level, urgently needed professional and technical talents and innovative talents, implement the knowledge update project for professional and technical personnel and the training plan for advanced manufacturing excellent engineers, build a number of engineering innovation training centers in colleges and universities, and build a team of high-quality professional and technical personnel. Strengthen vocational education and skills training, guide a group of ordinary undergraduate colleges and universities to transform into applied technology colleges and universities, establish a number of training bases, carry out pilot demonstrations of the modern apprenticeship system, and form a team of technical and skilled talents with complete categories and superb skills. Encourage enterprises to cooperate with schools to cultivate scientific research personnel, technical and technical talents and interdisciplinary talents urgently needed by the manufacturing industry, deepen the reform of the recruitment and training model of engineering doctorate and master professional degree graduates in related fields, and actively promote the combination of industry, education and research. Strengthen the forecast of industrial talent demand, improve various talent information databases, and build an industrial talent level evaluation system and information release platform. Establish a talent incentive mechanism to increase recognition and rewards for outstanding talents. Establish and improve the manufacturing talent service organization, improve the system and mechanism of talent flow and use. Adopt various forms to select all kinds of outstanding talents. The focus is on professional and technical personnel to study and train abroad, and explore the establishment of international training bases. Increase the intensity of attracting talents in the manufacturing industry, and introduce leading talents and talents in short supply.

(6) Improve policies for small, medium and micro enterprises.

Implement and improve preferential fiscal and taxation policies to support the development of small and micro enterprises, and optimize the focus and methods of using special funds for the development of small and medium-sized enterprises. Give full play to the levering effect of financial funds, attract social capital, and accelerate the establishment of a national small and medium-sized enterprise development fund. Support qualified private capital to establish financial institutions such as small and medium-sized banks in accordance with the law, encourage commercial banks to increase the construction of financial service institutions for small and micro enterprises, establish and improve the financing guarantee system for small and micro enterprises, and innovate products and services. Accelerate the establishment of a credit investigation system for small, medium and micro enterprises, and actively develop financial leasing, intellectual property pledge loans, credit insurance policy pledge loans, etc. for small and micro enterprises. Build and improve small and medium-sized enterprise entrepreneurial bases, and guide various venture capital funds to invest in small and micro enterprises. Encourage universities, scientific research institutes, engineering centers, etc. to open and share various experimental (test) facilities for small and medium-sized enterprises. Strengthen the construction of a comprehensive service system for small, medium and micro enterprises, improve the network of public service platforms for small, medium and micro enterprises, establish an information interconnection mechanism, and provide small, medium and micro enterprises with professional services such as entrepreneurship, innovation, financing, consulting, training, and talents.

(7) Further expand the opening up of the manufacturing industry.

Deepen the reform of the foreign investment management system, establish a management mechanism of national treatment plus a negative list before foreign investment access, implement a management model that focuses on filing and supplemented by approval, and creates a stable, transparent, and predictable business environment. Comprehensively deepen the reform of foreign exchange management, customs supervision, inspection and quarantine management, and improve the level of trade and investment facilitation. Further relax market access, revise steel, chemical, shipbuilding and other industrial policies, support manufacturing enterprises to introduce advanced technology and high-end talents through entrusted development, patent authorization, crowdsourcing and innovation, etc., and promote the use of foreign capital by focusing on the introduction of technology, capital, Equipment has changed to joint venture development, foreign mergers and acquisitions, and the introduction of leading talents. Strengthen foreign investment legislation, strengthen legal protection for manufacturing enterprises going global, regulate overseas business operations of enterprises, and safeguard legitimate rights and interests of enterprises. Explore the use of industrial funds, state-owned capital gains and other channels to support high-speed rail, electric power equipment, automobiles, engineering construction and other equipment and superior production capacity to go out, and implement overseas investment and mergers. Accelerate the construction and level improvement of supporting service institutions for the manufacturing industry to go global, establish a public service platform for foreign investment in the manufacturing industry and a technical trade service platform for export products, and improve the early warning and coordination mechanism for dealing with trade frictions and major overseas investment issues.

(8) Improve the organization and implementation mechanism.

Establish a leading group for the construction of a national manufacturing power, headed by leading comrades from the State Council, and responsible comrades from relevant departments and units of the State Council as members. The main responsibilities of the leading group are: overall planning and coordination of the overall work of building a strong manufacturing country, reviewing major plans, major policies, major engineering projects, major issues and important work arrangements, strengthening strategic planning, and guiding departments and localities to carry out their work. The office of the leading group is located in the Ministry of Industry and Information Technology, which undertakes the daily work of the leading group. Set up a strategic advisory committee for the construction of a manufacturing power to study forward-looking and strategic major issues in the development of the manufacturing industry, and provide consultation and evaluation for major manufacturing decisions. Support the construction of multi-level, multi-field, and multi-form new think tanks with Chinese characteristics, including social think tanks and corporate think tanks, to provide strong intellectual support for the construction of a manufacturing power. Establish a supervision and inspection and third-party evaluation mechanism for the implementation of the "Made in China 2025" task, and improve the statistical monitoring, performance evaluation, dynamic adjustment, and supervision and evaluation mechanisms. Establish a mid-term evaluation mechanism for "Made in China 2025", and make necessary adjustments to the target tasks in due course.

All regions and departments must fully understand the significance of building a strong manufacturing country, strengthen organizational leadership, improve working mechanisms, and strengthen departmental coordination and linkage between upper and lower levels. All regions should study and formulate specific implementation plans based on local realities, refine policies and measures, and ensure that various tasks are implemented in place. The Ministry of Industry and Information Technology shall, in conjunction with relevant departments, strengthen follow-up analysis and supervision and guidance, and report major matters to the State Council in a timely manner.

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Ten major industries will support the "Chinese Dream" of manufacturing power

See how China's manufacturing rises from the perspective of new energy vehicles

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