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# 全国水利发展统计公报

2017 Statistic Bulletin  
on China Water Activities

中华人民共和国水利部 编

Ministry of Water Resources, People's Republic of China



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作 者	中华人民共和国水利部 编 Ministry of Water Resources, People's Republic of China
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2017 年是实施“十三五”规划、全面深化供给侧结构性改革、加快推进重大水利工程和灾后水利薄弱环节建设的关键之年。在党中央、国务院的坚强领导下，各级水利部门深入学习贯彻习近平新时代中国特色社会主义思想和党的十九大精神，紧紧围绕国家水安全主线，全面加快水利改革发展步伐，水利建设成效显著，水利支撑社会经济发展、促进生态环境保护的能力进一步提高。



# 1

## 水利固定资产投资

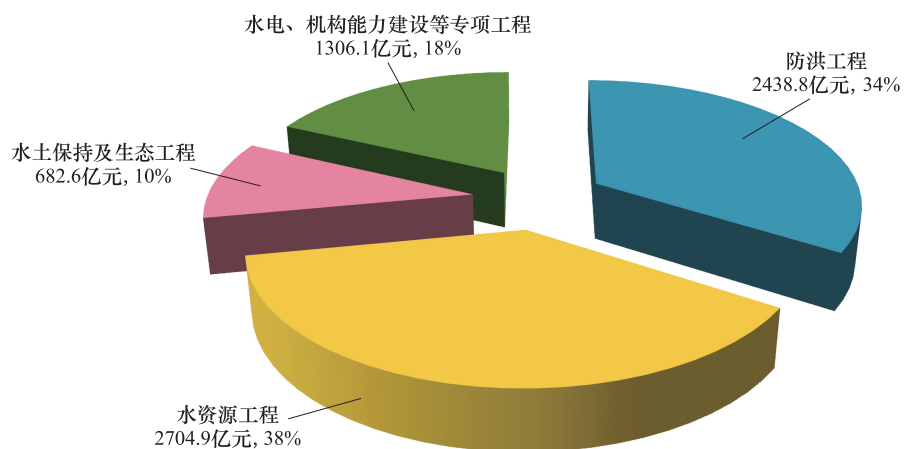
全年水利建设完成投资 7132.4 亿元，较上年增加 1032.8 亿元，增加 16.9%。其中：建筑工程完成投资 5069.7 亿元，较上年增加 14.6%；安装工程完成投资 265.8 亿元，较上年增加 4.4%；设备及工器具购置完成投资 211.7 亿元，较上年增加 22.5%；其他完成投资（包括移民征地补偿等）1585.2 亿元，较上年增加 26.8%。

	2011 年 /亿元	2012 年 /亿元	2013 年 /亿元	2014 年 /亿元	2015 年 /亿元	2016 年 /亿元	2017 年 /亿元	2017 年比 上年增加 比例/%
全年完成	3086.0	3964.2	3757.6	4083.1	5452.2	6099.6	7132.4	16.9
建筑工程	2103.2	2736.5	2782.8	3086.4	4150.8	4422.0	5069.7	14.6
安装工程	121.7	237.8	173.6	185.0	228.8	254.5	265.8	4.4
设备及各类工器具购置	115.2	178.1	161.1	206.1	198.7	172.8	211.7	22.5
其他（包括移民征地补偿等）	745.9	811.8	640.2	605.6	873.9	1250.3	1585.2	26.8

在全年完成投资中，防洪工程建设完成投资 2438.8 亿元，水资源工程建设完成投资 2704.9 亿元，水土保持及生态工程完成投资 682.6 亿元，水电、机构能力建设等专项工程完成投资 1306.1 亿元，分别较

上年增加 17.4%、4.6%、69.1% 和 26.4%。

2017年分用途完成投资情况

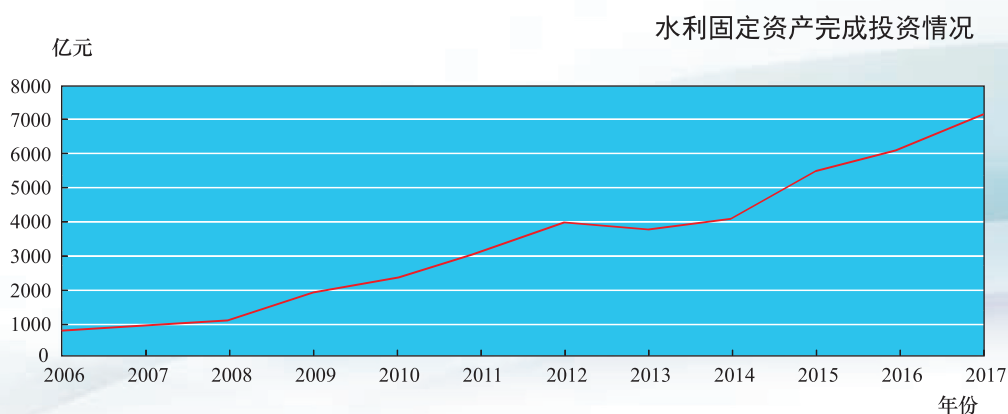


七大江河流域完成投资 5472.0 亿元，东南诸河、西北诸河以及西南诸河等其他流域完成投资 1660.4 亿元；东部、中部、西部、东北地区完成投资分别为 2697.5 亿元、1505.7 亿元、2642.7 亿元和 286.5 亿元，占全部完成投资的比例分别为 37.8%、21.1%、37.1% 和 4.0%。

在全年完成投资中，中央项目完成投资 112.7 亿元，地方项目完成投资 7019.7 亿元。大中型项目完成投资 1430.5 亿元，小型及其他项目完成投资 5701.9 亿元。各类新建工程完成投资 5507.6 亿元，扩建、改建等项目完成投资 1624.8 亿元。

全年水利建设新增固定资产4187.5亿元。截至2017年年底，在建项目累计完成投资16077.6亿元，投资完成率为57.3%；累计新增固定资产8925.3亿元，固定资产形成率为55.5%，比上年减少8.8个百分点。

当年施工的水利建设项目26698个，在建项目投资总规模25006.2亿元，较上年增加15.6%。其中：有中央投资的水利建设项目15554个，较上年减少5.6%；在建投资规模13259.6亿元，较上年增加9.4%。新开工项目19724个，较上年增加7.1%，新增投资规模9075.2亿元，较上年增加31.2%。全年水利建设完成土方、石方和混凝土方分别为35.2亿立方米、5.5亿立方米、0.9亿立方米。截至2017年年底，在建项目计划实物工程量完成率分别为：土方67.7%、石方64.4%、混凝土方59.7%。



## 2

## 重点水利建设

**江河湖泊治理。**全年在建江河治理工程 5646 处，其中：堤防建设 640 处，大江大河及重要支流治理 859 处，中小河流治理 3639 处，行蓄洪区安全建设及其他项目 508 处。截至 2017 年年底，在建项目累计完成投资 4070.7 亿元，投资完成率 67.4%。长江中下游河势控制和河道整治深入推进；黄河下游近期防洪工程已通过竣工验收；进一步治淮工程建设加快推进，38 项工程已开工 27 项，其中 5 项建成并发挥效益；东北三江治理基本完工；太湖流域水环境综合治理 21 项工程已开工 17 项，其中 10 项已建成并发挥效益。

**水库及枢纽工程建设。**全年在建水库及枢纽工程 1002 座，截至 2017 年年底，在建项目累计完成投资 2733.9 亿元，项目投资完成率 66.5%。新疆大石峡水利枢纽、青海那棱格勒水利枢纽、西藏湘河水利枢纽及配套灌区、云南车马碧水库、江西四方井水利枢纽等工程开工；大藤峡水利枢纽、河南前坪水库等工程加快建设；河南出山店水库、贵州夹岩水利枢纽及黔西北调水、安徽月潭水库等工程实现年度导截流目标；新疆卡拉贝利水利枢纽工程下闸蓄水；湖南涔天河水库

扩建工程首台机组并网发电；福建长泰枋洋水利枢纽工程具备向厦门市应急供水条件；河南沁河河口村水库和江西峡江水利枢纽工程通过竣工验收。

**水资源配置工程建设。**全年水资源配置工程在建投资规模 6372.4 亿元，累计完成投资 2879.4 亿元，项目投资完成率 45.2%。云南滇中引水、内蒙古引绰济辽、吉林西部供水、山西中部引黄水源、黑龙江锦西灌区等工程开工；安徽引江济淮、陕西引汉济渭、湖北鄂北水资源配置、甘肃引洮供水二期等工程加快建设；河北引黄入冀补淀主体工程完工并试通水。开展了 76 个河湖水系连通项目建设，改善了 230 余条（个）河流（湖泊或水库）的连通性。

**农村水利建设。**全年农村饮水安全巩固提升工程完成投资 368.6 亿元，其中中央补助资金 37 亿元；受益人口 5500 多万人，其中涉及国家建档立卡贫困人口 565 万人。截至 2017 年年底，农村自来水普及率达到 80%，农村集中式供水人口比例达到 85%。当年安排中央投资用于灌溉建设与节水改造 154 亿元、小型农田水利建设与管护资金 327.9 亿元。全年新增耕地灌溉面积 1070 千公顷，新增节水灌溉面积 2100 千公顷，新增高效节水灌溉面积 1639 千公顷。

**农村水电建设。**全年农村水电建设完成投资 200.0 亿元，新增水电站 161 座，装机容量 135.3 万千瓦，其中：新投产装机 100.3 万千瓦，



技改净增发电设备容量 35.0 万千瓦。全国农村水电配套电网建设共完成投资 55.3 亿元，新增 110 千伏及以上变电站容量 351.2 万千伏安；新增 35（63）千伏变电站容量 62.4 万千伏安；配电变压器容量 318.5 万千伏安。新增高压线路 2.4 万公里，低压线路 7.2 万公里。

**水土流失治理。**全年水土保持及生态工程在建投资规模 727.1 亿元，累计完成投资 422.1 亿元。全国新增水土流失综合治理面积 5.90 万平方公里，其中国家水土保持重点工程新增水土流失治理面积 0.79 万平方公里。对 433 座黄土高原淤地坝进行了除险加固。

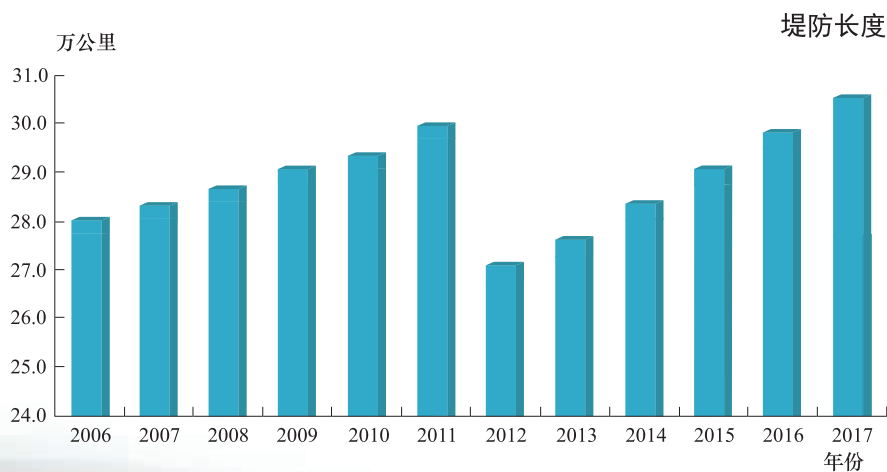
**行业能力建设。**全年水利行业能力建设完成投资 41.8 亿元，其中：防汛通信设施投资 4.4 亿元，水文建设投资 11.1 亿元，科研教育设施投资 2.0 亿元，其他投资 24.3 亿元。



# 3

## 主要水利工程施工

**堤防和水闸。**截至2017年年底，全国已建成5级及以上江河堤防30.6万公里<sup>①</sup>，达标堤防21.0万公里，堤防达标率为68.6%；其中1级、2级达标堤防长度为3.3万公里，达标率为80.1%。全国已建成江河堤防保护人口6.1亿人，保护耕地4.1万公顷。全国已建成流量为5立方米每秒及以上的水闸103878座，其中大型水闸893座；按水闸类型分，分洪闸8363座，排（退）水闸18280座，挡潮闸5130座，引水闸14435座，节制闸57670座。



① 2011年以前各年堤防长度含部分地区5级以下江河堤防长度。

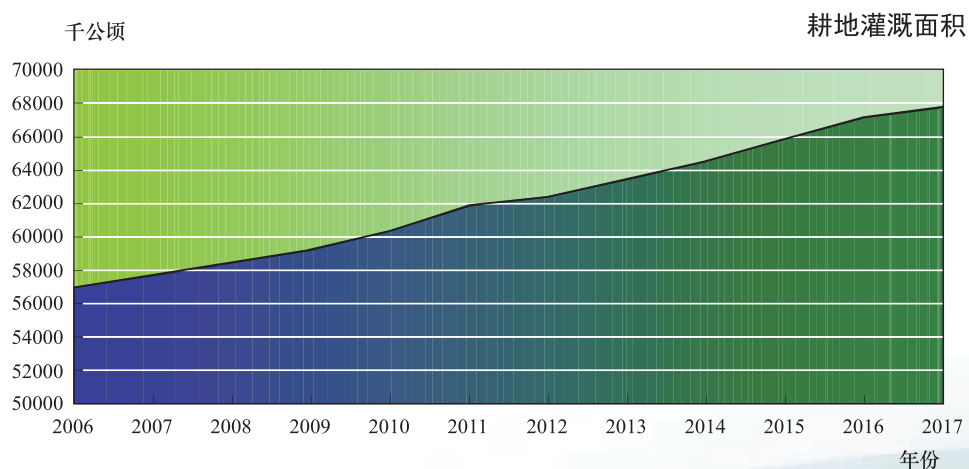


**水库和枢纽。**全国已建成各类水库 98795 座，总库容 9035 亿立方米。其中：大型水库 732 座，总库容 7210 亿立方米，占全部总库容的 79.8%；中型水库 3934 座，总库容 1117 亿立方米，占全部总库容的 12.4%。

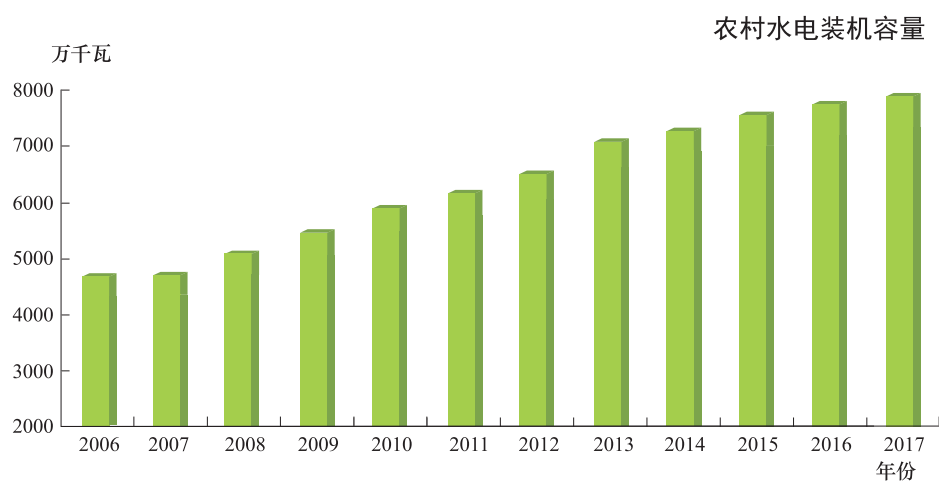
**机电井和泵站。**全国已建成日取水大于等于 20 立方米的供水机电井或内径大于 200 毫米的灌溉机电井共 496.0 万眼。全国已建成各类装机流量 1 立方米每秒或装机功率 50 千瓦以上的泵站 95077 处，其中：大型泵站 375 处，中型泵站 4255 处，小型泵站 90447 处。



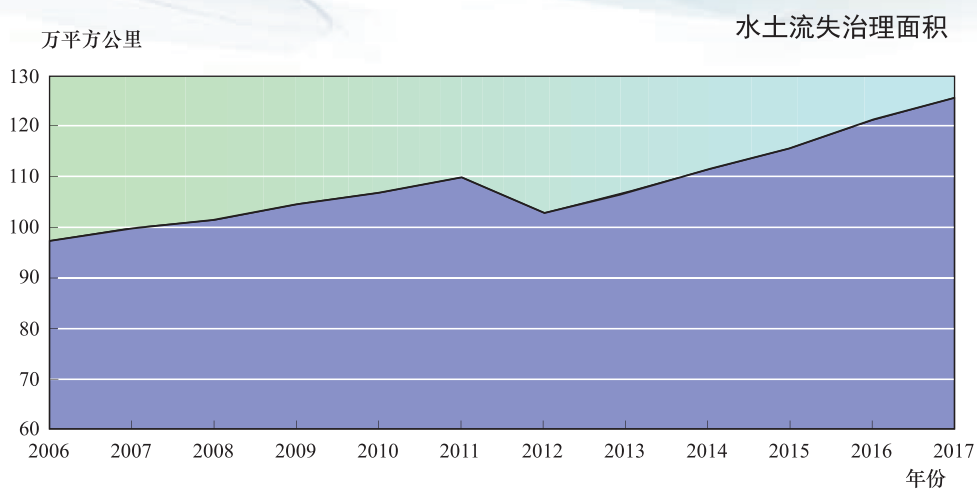
**灌溉工程。**全国已建成设计灌溉面积 2000 亩及以上的灌区 22780 处，耕地灌溉面积 37483 千公顷。其中：50 万亩以上灌区 177 处，耕地灌溉面积 12416 千公顷；30 万 ~ 50 万亩大型灌区 281 处，耕地灌溉面积 5425 千公顷。截至 2017 年年底，全国灌溉面积 73946 千公顷，其中耕地灌溉面积 67816 千公顷，占全国耕地面积的 50.3%。全国节水灌溉工程面积 34319 千公顷，其中：喷灌、微灌面积 10561 千公顷，低压管灌面积 9990 千公顷。



**农村水电。**全国已建成农村水电站 47498 座，装机容量 7927.0 万千瓦，占全国水电装机容量的 23.2%；年发电量 2477.2 亿千瓦时，占全国水电发电量的 20.7%。



**水土保持工程。**全国水土流失综合治理面积达 125.8 万平方公里<sup>①</sup>，累计封禁治理保有面积达 21.85 万平方公里。在 16 个国家级重点预防区、19 个国家级重点治理区开展了水土流失动态监测，监测面积约 76.43 万平方公里。



① 2012 年数据与第一次全国水利普查数据进行了衔接。



**水文站网。**全国已有各类水文测站 113245 处，其中：国家基本水文站 3148 处，专用水文站 3954 处，水位站 13579 处，雨量站 54477 处，蒸发站 19 处，墒情站 2751 处，水质站 16123 处，地下水站 19147 处，实验站 47 处。向县级以上防汛指挥部门报送水文信息的各类水文测站 59104 处，发布预报的各类水文测站 1565 处。已建成水环境监测中心（分中心）333 个，水质监测站网基本覆盖全国重要江河湖库水功能区、省级行政区界等地表水体和重点地区地下水体。

**水利网信。**截至 2017 年年底，省级以上水利部门配置各类服务器 7213 台（套），形成在线存储能力 3.3PB，存储各类信息资源总量达 1.9PB；全国县级以上水利部门配置各类卫星设备 2731 台（套），具备北斗卫星短报文传输能力的报讯站达 7900 多个，配置应急通信车 68 辆、无人机 409 架、集群通信终端 5767 个；全国省级以上水利部门各类信息采集点达 42 万处，其中：水文、水资源、水土保持等采集点约 19.6 万个，大中型水库安全监测采集点约 22.4 万个。



## 4

## 水资源利用与保护

**水资源状况。**2017年全国水资源总量28761.2亿立方米，比多年平均偏多3.8%；全国年平均降水量664.8毫米，比多年平均偏多3.5%，较上年减少8.9%。截至2017年年底，全国660座大型水库和3547座中型水库年末蓄水总量4079.8亿立方米，比年初增加82.6亿立方米。

**水利工程供水能力。**全年新增规模以上水利工程供水能力92.1亿立方米。截至2017年年底，全国水利工程供水能力达8562.4亿立方米，其中：跨县级区域供水工程581.7亿立方米，水库工程2337.8亿立方米，河湖引水工程2051.4亿立方米，河湖泵站工程1686.5亿立方米，机电井工程1385.2亿立方米，塘坝窖池工程354.8亿立方米，非常规水资源利用工程165.0亿立方米。

**水资源利用。**全年总供水量 6043.4 亿立方米，其中：地表水源占 81.8%，地下水源占 16.8%，其他水源占 1.4%。全国总用水量 6043.4 亿立方米，其中：生活用水 838.1 亿立方米，占总用水量的 13.9%；工业用水 1277.0 亿立方米，占总用水量的 21.1%；农业用水 3766.4 亿立方米，占总用水量的 62.3%；人工生态环境补水 161.9 亿立方米，占总用水量的 2.7%。与上年比较，用水量增加 3.2 亿立方米，其中：农业用水量减少 1.6 亿立方米，工业用水量减少 31.0 亿立方米，生活用水及人工生态环境补水量分别增加 16.5 亿立方米和 19.3 亿立方米。全国人均综合用水量为 436 立方米，农田灌溉水有效利用系数 0.548。万元国内生产总值（当年价）用水量 73 立方米，万元工业增加值（当年价）用水量 45.6 立方米。按可比价计算，万元国内生产总值用水量和万元工业增加值用水量分别比 2016 年下降 6.4% 和 8.2%。城镇和工业用水计量率超过 85%，农业灌溉用水计量率达到 61%。

**河湖水质。**根据对全国 24.5 万公里河流水质评价结果，Ⅰ～Ⅲ类水水质河长占 78.5%。全国重要江河湖泊水功能区水质达标率 76.9%。



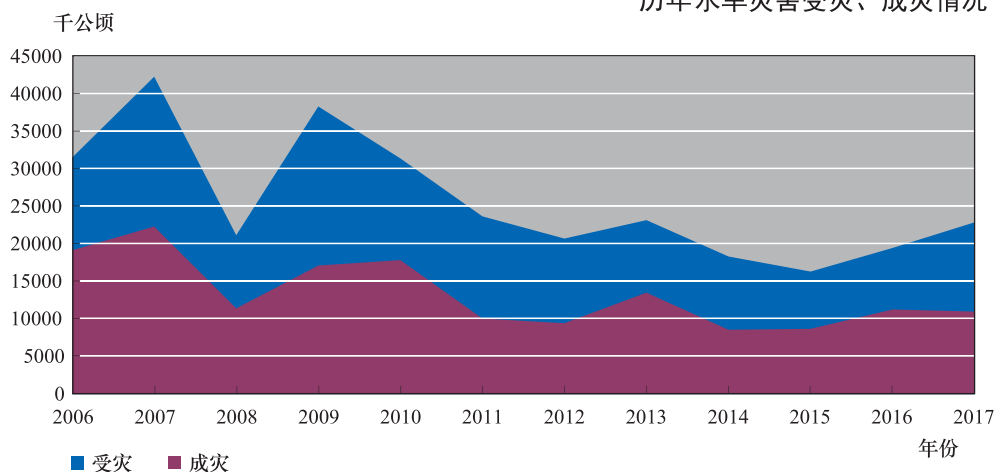
## 5

## 防洪抗旱

2017年全国洪涝灾害总体偏轻，洪涝灾害年均损失率为0.26%。全国农作物受灾面积5196千公顷，成灾面积2781千公顷，受灾人口0.55亿人，因灾死亡316人，失踪39人，倒塌房屋14万间，县级以上城市受淹104个，直接经济损失2143亿元，其中水利设施直接经济损失345亿元。湖南、吉林、广东、广西、江西、湖北、陕西等省（自治区）受灾较重。全国因山洪灾害造成人员死亡和失踪占全部死亡和失踪人数的64%，因台风造成的经济损失占全国洪涝灾害造成的直接经济损失的比例为16%。

全国旱灾总体偏轻，干旱灾害年均损失率为0.05%。内蒙古、黑龙江、山西、辽宁、山东、湖北、甘肃等省（自治区）旱灾比较严重。全国农田因旱受灾面积9946千公顷，成灾面积4490千公顷，直接经济损失438亿元。全国因旱累计有478万城乡人口、514万头大牲畜发生临时性饮水困难。

历年水旱灾害受灾、成灾情况



全年中央下拨特大防汛抗旱经费 38.4 亿元，其中：特大防汛经费 32.9 亿元，特大抗旱经费 5.5 亿元。2017 年全年防洪减淹耕地 1904 千公顷，避免城市受淹 139 座次，防洪减灾经济效益 672 亿元。解决了 404 万城乡居民和 315 万头大牲畜因旱临时饮水困难，全年完成抗旱浇地面积 18521 千公顷。抗旱挽回粮食损失 220 亿公斤。各地防汛抢险累计投入 570 万人次，出动舟船 3.9 万舟次、运输设备 25.3 万班次、机械设备 22.5 万班次，消耗物资价值 21.5 亿元，紧急组织转移群众 713 万人次，开动机电井 267 万眼、泵站 4.3 万处、机动抗旱设备 456 万台套，出动各类运水车 69 万辆次。





## 6

## 水利改革与管理

**河（湖）长制。**截至2017年年底，北京、天津等25个省（自治区、直辖市）已全面建立河长制，辽宁、广西、西藏、陕西、甘肃、新疆等6个省（自治区）河长制建立正加快进行。全国共明确省、市、县、乡四级河长湖长30多万名，部分省份将河长体系延伸到村，设立村级河长60多万名（有的地方含巡河员、护河员）。各省（自治区、直辖市）均设置省、市、县级河长制办公室，建立了配套制度，党政负责、水利牵头、部门联动、社会参与的工作格局基本形成。

**最严格水资源管理。**水利部会同国家发展改革委等9部委完成对31个省（自治区、直辖市）2017年度最严格水资源管理制度考核。批复实施20条跨省重要江河水量分配方案，完成长江经济带水资源承载能力评价。南水北调东线一期工程向山东调水8.89亿立方米，中线一期工程向北京、天津、河北、河南等4省（直辖市）调水共计45.15亿立方米，受水区供水安全保障能力显著提升。加强黄河、黑河等重要河流水资源统一调度，黄河干流实现连续18年不断流，黑河下游东居延海连续13年不干涸。以县域为单元全面开展节水型社会达标建

设，北京、内蒙古等8省（自治区、直辖市）共计65个县（区）级行政区通过达标验收。105个水生态文明试点城市建设进展顺利，其中41个试点城市通过验收。继续推进河北地下水超采综合治理，农村地区已压采地下水约20.2亿立方米，南水北调东中线一期工程受水区累计压采地下水15.23亿立方米，占近期压采目标的69.2%。7个水权试点单位基本完成试点任务，继续推进6个地区水流产权试点，完成试点方案编制和批复实施。2017年中国水权交易所完成水权交易31单，成交水量8.07亿立方米，自开业以来累计促成水权交易41单，成交水量14.43亿立方米，交易额8.99亿元。

**水务管理。**截至2017年年底，全国已组建水务局或由水利局承担水务管理职能的县级以上行政区共计2626个，占全国县级以上行政区总数的81.65%。在组建的1531个水务局（厅）中，省级水务局（厅）4个，副省级水务局9个，地市级水务局216个，县级水务局1302个。水务系统共有自来水厂2360座，供水管道总长49.6万公里，自来水供水能力约1.64亿立方米每日，其中地表水供水能力1.43亿立方米每日，地下水0.21亿立方米每日，年供水总量339.0亿立方米，总供水人口约3.17亿人。

**建设与管理。**截至2017年年底，全国纳入水管体制改革范围的水管单位14366个，经精简撤并调整为13991个，较改革前下降2.6%。13991个水管单位共落实两项经费296.2亿元，落实率达88.4%，其中：落实公益性人员基本支出175.2亿元，落实率为95.6%；落实公

公益性工程维修养护经费 121.0 亿元，落实率为 79.6%；实行管养分离（包括内部管养分离）的水管单位 13014 个，占水管单位总数的 93%。累计批准国家级水利风景区 832 个，其中：水库型 362 个，自然河湖型 182 个，城市河湖型 175 个，湿地型 47 个，灌区型 30 个，水土保持型 36 个。

**农村水利改革。**2017 年吸引社会资本投入高效节水灌溉和农村饮水安全巩固提升的资金，分别约占总投资的 13% 和 30%。普遍推行“两证一书”权责制度，全国约有 55% 的小型农田水利工程明晰产权。围绕三大类工程、13 项改革措施，完成了全国 100 个县农田水利设施产权制度改革和创新运行管护机制试点任务。大型灌区、泵站等管理单位公益性人员基本支出和公益性工程维修养护经费落实率分别达到 70% 和 56%。

**水价改革。**2017 年国家发展改革委、财政部、水利部、农业部、国土资源部联合印发《关于扎实推进农业水价综合改革的通知》《农业水价综合改革工作绩效评价办法（试行）》等文件，把农业水价改革纳入最严格水资源管理制度和粮食安全省长责任制考核。截至 2017 年年底，农业水价综合改革已覆盖全国近 700 个县和 100 个灌区，改革实施面积累计达到 5200 万亩以上，其中 2017 年新增农业水价综合改革面积 3200 余万亩。实施农业水价综合改革的地区节水成效初显，亩均节水约 100 立方米，灌溉历时平均缩短约 20%。

**水利规划和前期工作。**全年中央层面审批水利规划 12 项，其中：国家发展改革委审批《全国坡耕地水土流失综合治理“十三五”专项建设方案》等 3 项，水利部审批 9 项。全面启动第三次全国水资源调查评价，积极推进全国层面重点水利规划工作，加快推进重点流域和主要支流综合规划审批，扎实推进国家重大战略水利专项规划。2017 年水利部报送国家发展改革委项目共 21 项，投资规模 1053.37 亿元。国家发展改革委批复项目 21 项，其中可行性研究报告 18 项、工程规划 3 项，总投资 1980.85 亿元。水利部批复初步设计 9 项，总投资 1876.97 亿元。

**水土保持管理。**全年全国共审批生产建设项目水土保持方案 3.23 万个，减少新增水土流失面积 531.01 平方公里。全年完成生产建设项目的水土保持设施验收 0.79 万个。截至 2017 年年底，全国累计有 31 个省（自治区、直辖市）出台了水土保持法实施办法（条例），25 个省（自治区、直辖市）制定了省级水土保持补偿费征收使用管理办法（标准）。

**农村水电管理。**2017 年水利部颁布实施了《绿色小水电评价标准》（SL 752—2017），12 个省份的 44 座小水电站创建成为全国首批绿色小水电站。截至 2017 年年底，全国 3200 多条中小河流水能资源开发规划修编完成，规划成果基本覆盖 2025 年以前有开发需求的中小河流。积极推进农村水电站安全生产标准化建设，已累计建成 2100 座安全生产标准化电站。

**水利移民。**全年开工建设集中安置点 266 个，新建集中安置住房 519.0 万平方米。搬迁人口 147315 人，其中：农村移民搬迁 144329 人，城集镇移民搬迁 2986 人。生产安置 165552 人，其中：农业生产安置 79534 人，逐年补偿 11591 人，货币补偿安置（自行安置）50686 人，养老保障安置 14165 人，投亲靠友安置 1082 人，其他安置 8494 人。

**安全监督。**全年水利行业共发生生产安全事故 12 起，死亡 19 人。全国省级及以上水行政主管部门组织 1824 个检查组共 8258 名专家赴现场开展水利安全巡查、检查和专项整治活动，排查治理隐患 37682 个。审定公布水利安全生产标准化一级单位 60 家，其中：水利水电工程施工企业 38 家，水利工程项目法人 9 家，水利工程管理单位 13 家。完成水利部负责的水利水电工程施工企业相关责任人员安全生产考核 8600 余人。水利部共派出 10 个批次 159 个稽查组对全国 347 个项目进行稽查，下发“一省一单”稽查整改意见 144 份。流域机构和省级水行政主管部门开展自主稽查，共派出稽查组 449 个，稽查项目 1342 个，下发整改通知 773 份。

**依法行政。**全年修改水行政法规 4 件，清理水利部规章 43 件和规范性文件 200 余件。其中：规章废止 3 件、修改 17 件；规范性文件废止 13 件、宣布失效 14 件、修改 13 件。2017 年全国立案查处水事违法案件 14413 件，结案 12070 件，结案率 83.74%；各级水利部门共调处水事纠纷 942 件，解决 903 件；省级以上水利部门共办结行政复议案件 21 件，办理行政应诉 28 件。





**行政许可。**全年水利部（包括部机关和各流域机构）共受理行政审批事项 2005 件，办结 1840 件。其中：水工程建设规划同意书审核 35 件，水利基建项目初步设计文件审批 9 件，取水许可发放 126 件，江河、湖泊新建、改建或者扩大排污口审核 10 件，非防洪建设项目洪水影响评价报告审批 17 件，河道管理范围内建设项目工程建设方案审批 291 件，河道管理范围内有关活动（不含河道采砂）审批 1 件，河道采砂许可 20 件，生产建设项目水土保持方案审批 61 件，生产建设项目水土保持设施验收审批 37 件，国家基本水文测站设立和调整审批 4 件，专用水文站测站审批 1 件，国家基本水文测站上下游建设影响水文监测工程的审批 18 件，水利工程建设监理单位资质认定（新申请、增项、晋升、延续）751 件，水利工程质量检测单位甲级资质认定（新申请、增项、晋升、延续）194 件。

**水利科技。**全年国家立项安排 4.3 亿元资金用于水利科技项目，其中：组织承担国家重点研发计划“水资源高效开发利用”等涉水重点专项 22 项，水利技术示范项目 36 项。水利科技成果获国家科技进步二等奖 3 项，国家技术发明二等奖 2 项。截至 2017 年年底，水利系统共有国家和部级重点实验室 12 个，工程技术研究中心 15 个。落实中央级科学事业单位修缮购置专项资金 11835 万元，落实中央财政公益性科研院所基本科研业务费 10744 万元。水利行业现行有效标准达 845 项，在编水利技术标准 137 项。



**国际合作。**全年共签署水利国际合作协议4份，在华举办多双边高层圆桌会议或技术交流研讨会9次，世界银行、亚洲开发银行、全球环境基金开展的5个项目进展顺利，中瑞、中丹、中法合作项目和8项国际科技合作项目稳步开展。



# 7

## 水利行业状况

**水利单位。**截至 2017 年年底，全社会隶属于县级及以上的从事各类水利活动的法人单位 24371 个，从业人员 107.2 万人。其中：机关单位 2720 个，从业人员 12.9 万人；事业单位 17393 个，从业人员 57.7 万人；企业 3902 个，从业人员 36.0 万人；社团及其他组织 356 个，从业人员 0.6 万人。全国共有水利水电工程施工总承包特级资质企业 25 家，水利水电工程施工总承包一级资质企业 239 家。

**职工与工资。**全国水利系统从业人员 93.2 万人，较上年减少 2.1%。其中：全国水利系统在岗职工 90.4 万人，较上年减少 2.3%。在岗职工中，部直属单位在岗职工 6.4 万人，较上年减少 0.7%，地方水利系统在岗职工 84 万人，较上年减少 2.4%。全国水利系统在岗职工工资总额为 739.1 亿元，全国水利系统在岗职工年平均工资 83534 元。

## 职工与工资情况

	2007年	2008年	2009年	2010年	2011年	2012年	2013年	2014年	2015年	2016年	2017年
在岗职工人数 /万人	106.8	105.6	103.7	106.6	102.5	103.4	100.5	97.1	94.7	92.5	90.4
其中：部直属单位 /万人	7.2	7.2	7.2	7.4	7.5	7.4	7.0	6.7	6.6	6.4	6.4
地方水利系统 /万人	99.6	98.4	96.5	96.3	95.0	96.0	93.5	90.4	88.1	86.1	84
在岗职工工资 /亿元	211.3	234.4	264.7	297.9	351.4	389.1	415.3	451.4	529.4	640.5	739.1
年平均工资 /(元/人)	19573	22143	25633	28816	34283	37692	41453	46569	55870	69377	83534

**基层水利服务体系。**截至2017年年底，全国共有乡镇（流域或片区）水利站29351个；共有农民用水合作组织8.3万个，管理灌溉面积3.6亿亩，占全国农田有效灌溉面积的35.3%。

## 全国水利发展主要指标（2012—2017年）

指标名称	单位	2012年	2013年	2014年	2015年	2016年	2017年
1. 灌溉面积	千公顷	67780	69481	70652	72061	73177	73946
2. 耕地灌溉面积	千公顷	62491	63473	64540	65873	67141	67816
其中：本年新增	千公顷	2151	1552	1648	1798	1561	1070
3. 节水灌溉面积	千公顷	31217	27109	29019	31060	32847	34319
其中：高效节水灌溉面积	千公顷	14126	14271	16114	17923	19405	20551
4. 万亩以上灌区	处	7756	7709	7709	7773	7806	7839
其中：30万亩以上	处	456	456	456	456	458	458
万亩以上灌区耕地灌溉面积	千公顷	30087	30216	30256	32302	33045	33262
其中：30万亩以上	千公顷	11260	11252	11251	17686	17765	17840
5. 农村自来水普及率	%				76	79	80
农村集中式供水工程供水率	%				82	84	85



续表

指标名称	单位	2012 年	2013 年	2014 年	2015 年	2016 年	2017 年
6. 除涝面积	千公顷	21857	21943	22369	22713	23067	23824
7. 水土流失治理面积	万平方公里	103.0	106.9	111.6	115.5	120.4	125.8
其中：新增	万平方公里	4.4	5.3	5.5	5.4	5.6	5.9
8. 水库	座	97543	97721	97735	97988	98460	98795
其中：大型水库	座	683	687	697	707	720	732
中型水库	座	3758	3774	3799	3844	3890	3934
水库总库容	亿立方米	8255	8298	8394	8581	8967	9035
其中：大型水库	亿立方米	6493	6529	6617	6812	7166	7210
中型水库	亿立方米	1064	1070	1075	1068	1096	1117
9. 全年水利工程总供水量	亿立方米	6142	6183	6095	6103	6040	6043
10. 堤防长度	万公里	27.2	27.7	28.4	29.1	29.9	30.6
保护耕地	千公顷	42597	42573	42794	40844	41087	40946
堤防保护人口	万人	56566	57138	58584	58608	59468	60557
11. 水闸总计	座	97256	98192	98686	103964	105283	103878
其中：大型水闸	座	862	870	875	888	892	893
12. 年末全国水电装机容量	万千瓦	24881	28026	30183	31937	33153	34168
全年发电量	亿千瓦时	8657	9304	10661	11143	11815	11967
13. 农村水电装机容量	万千瓦	6569	7119	7322	7583	7791	7927
全年发电量	亿千瓦时	2173	2233	2281	2351	2682	2477
14. 当年完成水利建设投资	亿元	3964.2	3757.6	4083.1	5452.2	6099.6	7132.4
按投资来源分：							
(1) 中央政府投资	亿元	2033.2	1729.8	1648.5	2231.2	1679.2	1757.1
(2) 地方政府投资	亿元	1464.5	1542.0	1862.5	2554.6	2898.2	3578.2
(3) 国内贷款	亿元	265.6	172.7	299.6	338.6	879.6	925.8
(4) 利用外资	亿元	4.1	8.6	4.3	7.6	7.0	8.0
(5) 企业和私人投资	亿元	113.4	160.7	89.9	187.9	424.7	600.8
(6) 债券	亿元	5.2	1.7	1.7	0.4	3.8	26.5

续表

指标名称	单位	2012年	2013年	2014年	2015年	2016年	2017年
(7) 其他投资	亿元	78.3	142.1	176.5	131.7	207.1	235.9
按投资用途分:							
(1) 防洪工程	亿元	1426.0	1335.8	1522.6	1930.3	2077.0	2438.8
(2) 水资源工程	亿元	1911.6	1733.1	1852.2	2708.3	2585.2	2704.9
(3) 水土保持及生态建设	亿元	118.1	102.9	141.3	192.9	403.7	682.6
(4) 水电工程	亿元	117.2	164.4	216.9	152.1	166.6	145.8
(5) 行业能力建设	亿元	59.6	52.5	40.9	29.2	56.9	31.5
(6) 前期工作	亿元	40.7	40.7	65.1	101.9	174.0	181.2
(7) 其他	亿元	291.1	328.2	244.2	337.5	636.2	947.5

- 说明: 1. 本公报不包括香港特别行政区、澳门特别行政区以及台湾省的数据。
2. 节水灌溉面积2013年数据与第一次全国水利普查数据进行了衔接, 其他水利发展主要指标2012年统计数据已与第一次全国水利普查数据进行了衔接。其中, 堤防长度与水利普查成果衔接后, 进一步明确为5级及以上堤防。
3. 万亩以上灌区数自2012年起按设计灌溉面积统计。
4. 农村水电的统计口径为单站装机容量5万及以下的水电站及其配套电网。



# 2017 STATISTIC BULLETIN ON CHINA WATER ACTIVITIES

Ministry of Water Resources, P. R. China

The year of 2017 is a crucial one for the implementation of Thirteenth Five-Year Plan, deepening the supply-side structural reform in a comprehensive way, and boosting of major water projects and past-disaster rehabilitation of damaged or venerable water infrastructures. Under the strong leadership of the Party Central Committee and the State Council, water departments at each level have been studying and implementing Xi Jinping's thought of socialism with Chinese characteristics in the new era and the conceptual thinking of the 19th CPC National Congress, accelerating the pace of water development and reform in an all-round manner and focusing on the mainstream of national water security. Remarkable achievements had been made in water project construction, which has provided a strong support to social and economic development and further enhancement of capacity for eco-environment protection in China.

## I. Investment in Fixed Assets

Completed investment for water project construction in 2017 amounted to 713.24 billion Yuan, with an increase of 103.28 billion Yuan or 16.9% comparing to the year of 2016. In which, 506.97 billion Yuan put into construction project with a 14.6% increase; 26.58 billion Yuan for installation with an increase of 4.4%; 21.17 billion Yuan for purchase of machinery, equipment and instruments, with a increase of 22.5%; and 158.52 billion Yuan for other purposes (including compensation of resettlement and land acquisition), with an increase of 26.8%.



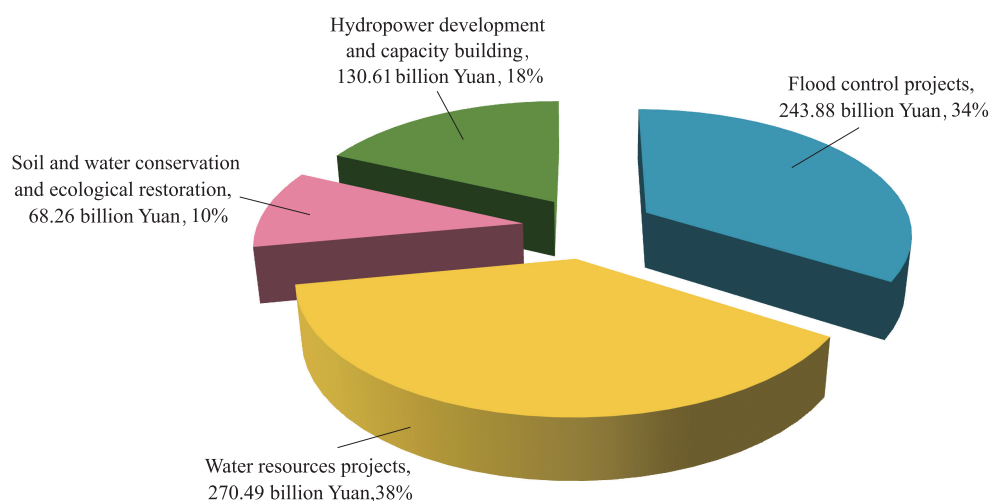
	2011 /billion Yuan	2012 /billion Yuan	2013 /billion Yuan	2014 /billion Yuan	2015 /billion Yuan	2016 /billion Yuan	2017 /billion Yuan	increase /%
Total completed investment	308.60	396.42	375.76	408.31	545.22	609.96	713.24	16.9
Construction project	210.32	273.65	278.28	308.64	415.08	442.20	506.97	14.6
Installation project	12.17	23.78	17.36	18.50	22.88	25.45	26.58	4.4
Purchase of machinery, equipment and instru- ments	11.52	17.81	16.11	20.61	19.87	17.28	21.17	22.5
Others (including compensation of resettlement and land acquisition)	74.59	81.18	64.02	60.56	87.39	125.03	158.52	26.8

In the total completed investment, 243.88 billion Yuan was allocated to the construction of flood control projects, 270.49 billion Yuan for the construction of water resources projects, 68.26 billion Yuan for soil and water conservation and ecological restoration, and 130.61 billion Yuan for special projects of hydropower development and capacity building, increased by 17.4%, 4.6%, 69.1% and 26.4% respectively to the year before.

The completed investment for seven major river basins reached 547.2 billion Yuan, of which 166.04 billion Yuan was invested in river basins in the southeast, southwest and northwest of China. Completed investments in eastern, middle, western and northeast regions were 269.75 billion Yuan, 150.57 billion Yuan, 264.27 billion Yuan and 28.65 billion Yuan, accounting 37.8%, 21.1%, 37.1% and 4.0% of the total, respectively.



### Completed investment of projects in 2017



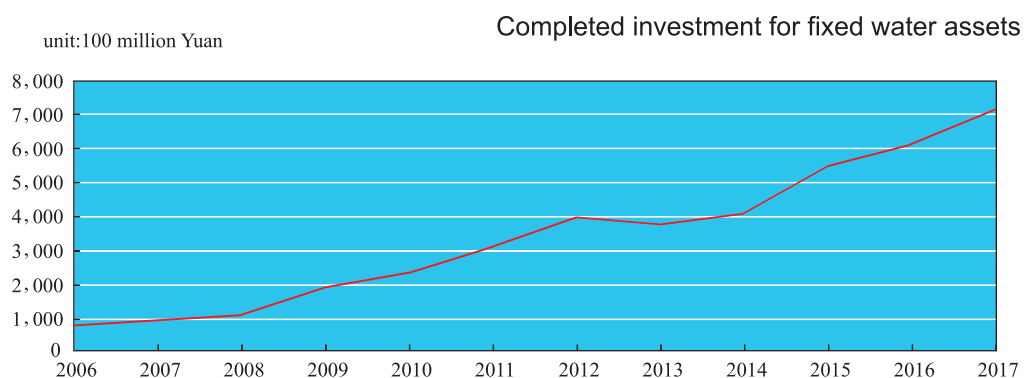
Of this total completed investment, the Central Government contributed 11.27 billion Yuan, and local governments contributed 701.97 billion Yuan. The completed investment of large and medium-sized projects was 143.05 billion Yuan; the completed investment of small-sized and other projects was 570.19 billion Yuan; the completed investment of newly-constructed project was 550.76 billion Yuan; and the completed investment of reconstruction and expansion was 162.48 billion Yuan.

The newly-added fixed assets totaled 418.75 billion Yuan. By the end of 2017, the accumulated completed investment of projects under construction was 1,607.76 billion Yuan, and the rate of completed investment reached 57.3%. The accumulated newly-added fixed assets totaled 892.53 billion Yuan and the rate of investment transferred into fixed assets was 55.5%, an decrease of 8.8% to the

year before.

A total of 26,698 water projects were under construction in 2017, with a total investment of 2,500.62 billion Yuan, an increase of 15.6% comparing to that of the year before. The projects with Central Government finance were 15,554 with a decrease of 5.6% comparing to the year before. The total funds used by projects under construction reached 1,325.96 billion Yuan and increased 9.4% comparing to the year before. There were 19,724 newly-constructed projects in 2017 with an increase of 7.1%, and newly-added investment was 907.52 billion Yuan with an increase of 31.2% comparing to the year before.

The completed civil works of earth, stone and concrete structures were 3.52 billion  $\text{m}^3$ , 550 million  $\text{m}^3$  and 90 million  $\text{m}^3$ , respectively. By the end of 2017, the ratio of complete quantity of earthwork, stonework, concrete of the under-construction projects were 67.7%, 64.4% and 59.7%, respectively.



## II. Key Water Projects Construction

**Harness of large rivers and lakes.** In 2017, there were 5646 river harness projects under construction, including 640 flood control dyke and embankment construction, 859 projects for large river and main tributary control and 3639 medium and small river control works and 508 flood diversion and storage areas or other projects. By the end of 2017, the accumulated investment in projects under construction was 407.07 billion Yuan, with a completion rate of 67.4%. River regime control and river course training and restoration had been undertaken in the middle and lower reaches of the Yangtze River. The recent flood control works in the lower reaches of the Yellow River passed completion check and acceptance. Huai River improvement project has been accelerated, with 27 out of 38 projects under construction. Among which, 5 projects were completed and started benefit generation. Control of three rivers project in the Northeast of China were nearly completed. There were 17 out of 21 projects for Comprehensive Improvement of Water Environment of Taihu Lake started construction, among which 10 projects completed for benefit generation.

**Reservoir projects.** There were 1002 reservoir projects under construction in 2017. By the end of 2017, the completed investment of under-construction projects reached 273.39 billion Yuan, accounting for 66.5% of the total completed investment. Following projects started construction, namely Dashixia Multipurpose Project in Xinjiang Autonomous Region, Nasuogele Multipurpose Project in Qinghai Province, Xianghe Multipurpose Project and counterpart irrigation system in Tibet Autonomous Region, Chemabi Reservoir in Yunnan Province and Sifangjing Multipurpose Project in Jiangxi Province. Datengtxia Multipurpose project and Qianping Reservoir have been accelerating construction. Water diversion and damming were completed for Chushandian Reservoir, Jiayan Multipurpose Project in Guizhou Province and Transfer Water to Northwest of Guizhou Province and

Yuetan Reservoir in Anhui Province. Kalabelli Dam in Xinjiang Autonomous Region was impounded, and the first unit of Centianhe Hydropower Station in Hunan Province started to generate electricity after the reservoir expansion. The completion of Changtaifangyang Multipurpose Project in Fujian Province enables emergency water supply to Xiamen City. Hekoucun Reservoir in Qinhe River of Henan Province and Xiajiang Multipurpose Project in Jiangxi Province passed check and acceptance.

**Water allocation projects.** The yearly investment for water allocation projects reached to 637.24 billion Yuan. The completed investment had accumulated to 287.94 billion Yuan, accounting for 45.2% of the total. The projects of Jinshajiang Water Diversion Project in Yunnan Province, Zhuoer-Liaohe Water Diversion Project in Inner Mongolia Autonomous Region, Water Supply to West of Jilin Province, Yellow River Water Diversion to Middle of Shanxi Province and Jinxi Irrigation District in Heilongjiang Province started construction. Water Diversion from Yangtze River to Huai River in Anhui Province, Water Diversion from Han River to Wei River, Water Supply to North of Hubei Province, Phase-II Tao River Water Diversion in Gansu Province have accelerated construction. The main schemes of Yellow River Diversion to Baiyangdian Wetlands in Hebei Province were completed for trial operation. A total of 76 river-lake connecting systems were constructed that could improve connectivity of about 230 rivers (lakes or reservoirs).

**Irrigation, drainage and rural water supply.** The completed investment for strengthening and improving safe drinking water supply reached 36.86 billion Yuan, among which 3.7 billion Yuan from Central Government subsidy, with a beneficial population of 55.00 million of which 5.65 million listed in national plan for poverty reduction. By the end of 2017, the rural population access to tap water supply made up a percentage of 80.0% and the percentage of population with centralized water supply system raised to 85%. The Central Government



allocated 15.4 billion Yuan for the construction of irrigation systems and rehabilitation of irrigation districts for water saving purpose. There were 32.79 billion Yuan allocated to the construction and operation and maintenance of small-scale farmland waterworks for irrigation and drainage. The newly-added effective irrigated area reached 1,070,000 ha; new-added water-saving irrigated area was 2,100,000 ha and newly-added highly-efficient water-saving irrigated area was 1,639,000 ha.

**Rural hydropower and electrification.** In 2017, the completed investment of rural hydropower station construction amounted to 20.0 billion Yuan; the newly increased hydropower stations were 161, with a total installed capacity of 1.353 million kW, among which the newly increased installed capacity amounts to 1.003 million kW, and the increased installed capacity by rehabilitation accounts to 0.35 million kW. The completed investment for rural electricity network in the whole country was 5.53 billion Yuan; the newly increased capacity of 110kV substation or above was 3.512 million kVA; the newly increased capacity of 35 (66) kV substation was 0.624 million kVA; the capacity of distribution transformer was 3.185 million kVA. The newly-added high pressure transmission line and low pressure line were 24,000 km and 72,000 km, respectively.



**Soil and water conservation.** A total of 72.71 billion Yuan was allocated to construction of soil and water conservation and ecological restoration project in 2017, with an accumulated investment of 42.21 billion Yuan. The newly-added areas with soil conservation measures reached 59,000 km<sup>2</sup>, of which the area under National Major Project for Soil Conservation was 7,900 km<sup>2</sup>. 433 silt-retention dam on Loess Plateau at high risk were strengthened and rehabilitated.

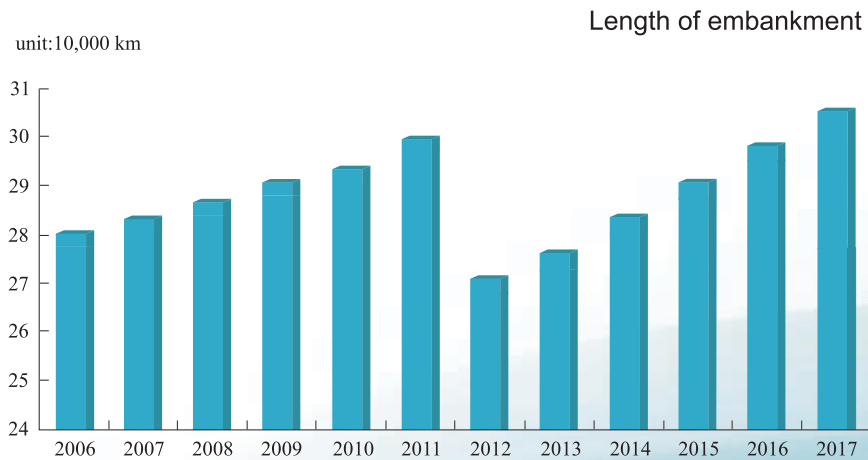
**Capacity building.** The completed investment for capacity building in 2017 was 4.18 billion Yuan, of which 0.44 billion Yuan spent on procurement of communication equipment for flood control, 1.11 billion Yuan for hydrological facilities, 0.2 billion Yuan for scientific research and education facilities and 2.43 billion Yuan for others.

### III. Key Water Facilities

**Embankments and water gates.** In 2017, the completed river dykes and embankments ranging at Grade-V or above had a total length of 306,000 km<sup>①</sup>. The accumulated length of dykes and embankments meeting the standard reached 210,000 km, with a percentage of 68.6% of the total, among which the Grade-I and Grade-II dykes and embankments up to the standard reached 33,000 km, with a reaching standard rate of 80.1%. These embankments can protect 610 million people and 41,000 ha of cultivated land. The number of water gates with a flow of 5 m<sup>3</sup>/s increased to 103,878, of which 893 were large water gates. Divided by types of water gates, there were 8,363 flood diversion sluices, 18,280 drainage/return water sluices, 5,130 tidal barrages, 14,435 water diversion intakes and 57,670 controlling gates.

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① The length of embankment before 2011 includes embankment below Grade-V.

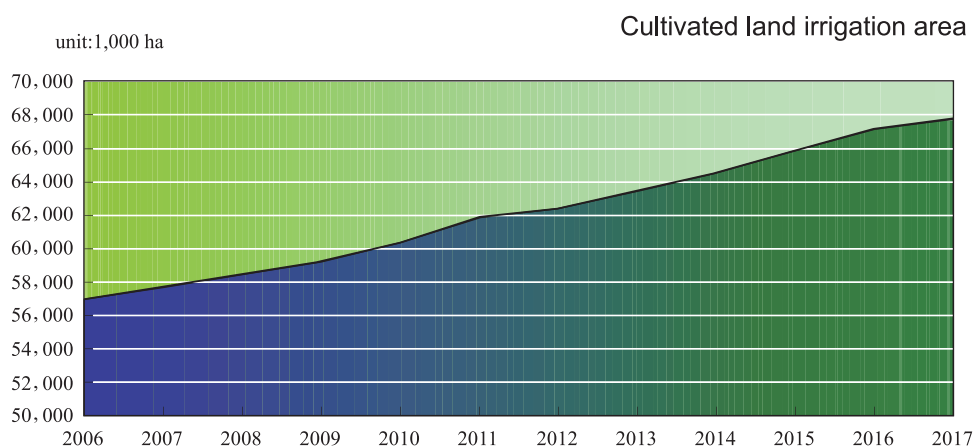


**Reservoirs and water complexes.** The number of reservoir in China reached 98,795, with a total storage capacity of 903.5 billion  $m^3$ . Of which 732 belong to large reservoirs with a total capacity of 721.0 billion  $m^3$ , accounting 79.8% of the total; 3,934 medium-sized reservoirs with a total capacity of 111.7 billion  $m^3$ , accounting 12.4% of the total.

**Tube wells and pumping stations.** A total of 4.96 million tube wells, with a daily water abstraction capacity equal or larger than 20  $m^3$  or an inner diameter larger than 200 mm, were employed for water supply in the whole country. A total of 95,077 pumping stations that have an installed flow of 1  $m^3/s$  or installed voltage above 50 kW were in operation, among which 375 categorized as larger pumping stations, 4,255 medium-sized and 90,447 small-sized pumping stations.

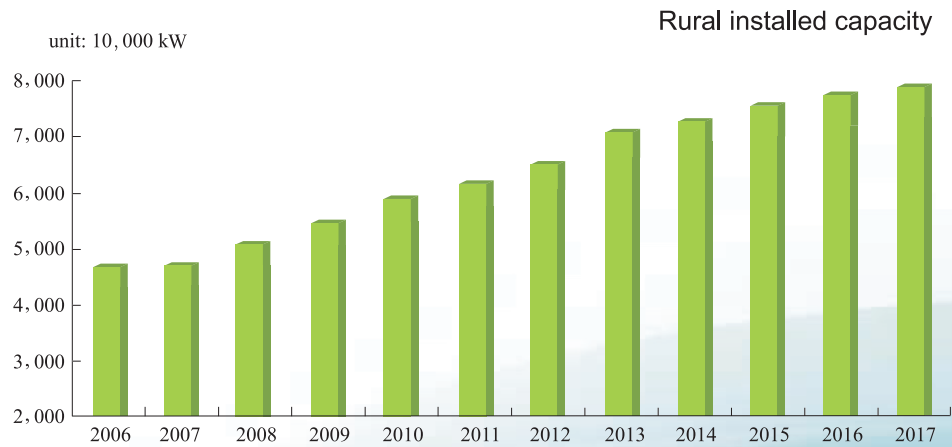
**Irrigation systems.** The irrigation districts with an area equal or above 2,000 mu added to 22,780, with a total effective irrigated area of 37.483 million ha. In which, the irrigation districts equal or above 500,000 mu reached 177, with a

total irrigated area of 12.416 million ha; the irrigation districts covering an area from 300,000 ~500,000 mu was 281, with a total irrigated area of 5.425 million ha. By the end of 2017, the total irrigated area and irrigated area of cultivated land reached to 73.946 million ha and 67.816 million ha respectively, taking 50.3% of the total cultivated land in China. The areas with water-saving irrigation facilities totaled 34.319 million ha, among which 10.561 million ha equipped with sprinkler or micro irrigation systems and 9.99 million ha installed low-pressure pipes.

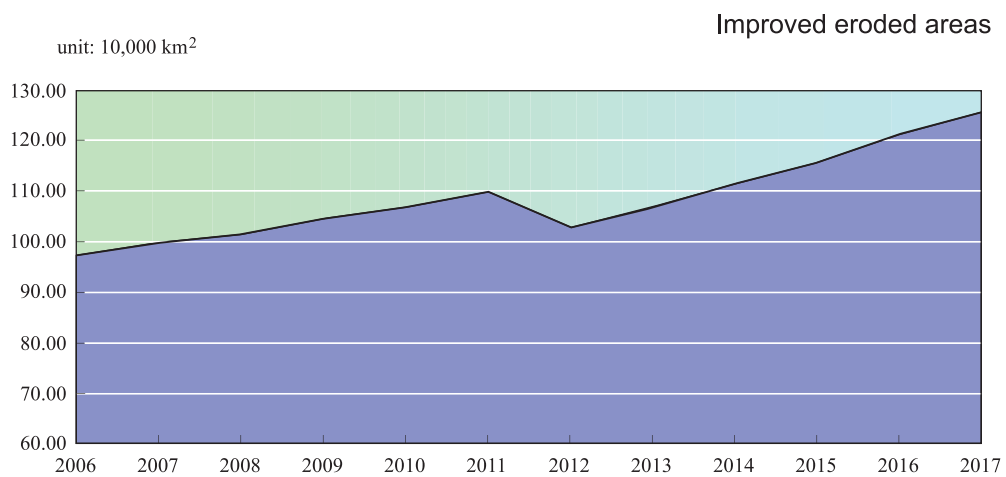


**Rural hydropower and electrification.** By the end of 2017, hydropower stations built in rural areas totaled 47,498, with an installed capacity of 79.27 million kW, accounting for 23.2% of the national total. The annual power generation by these hydropower stations reached to 247.72 billion kW·h, accounting for 20.7% of the national total.





**Soil and water conservation.** By the end of 2017, the restored eroded areas reached 1.258 million km<sup>2</sup><sup>❶</sup>; and the forbidden area for ecological restoration accumulated to 0.2185 million km<sup>2</sup>. Dynamic monitoring for soil and water loss had been conducted in 16 protection and control areas of national importance and 19 key areas of national importance, with a total monitored area of about 764,300 km<sup>2</sup>.



❶ Statistical data in 2012 is integrated with the data of first national census for water.

**Hydrological station networks.** In 2017, the number of hydrological stations of all kinds was totaled 113,245 in the whole country, including 3,148 national basic hydrologic stations, 3,954 special hydrologic stations, 13,579 gauging stations, 54,477 precipitation stations, 19 evaporation stations, 2,751 soil moisture monitoring stations, 16,123 water quality stations, 19,147 groundwater monitoring stations and 47 experimental stations. There were 59,104 various kinds of hydrological monitoring stations that provide hydrological information to flood control commanding headquarters at and above the county level; 1565 various kinds of hydrological monitoring stations for early warning and forecasting. A total of 333 water environment monitoring centers (sub-centers) in operation. The networks of water quality monitoring stations could cover nearly all surface water bodies and major groundwater bodies in water function zones of all major rivers and lakes or reservoirs and administrative boundaries at provincial level.

**Water networks and information systems.** By the end of 2017, water resources departments at and above the provincial level equipped 7,213 varied kinds of servers. The total storage capacity of various kinds of online storage equipment reached 3.3PB, with a total of 1.9PB storage of various kinds of data and information. The water resources departments at and above the county levels had installed 2731 various kinds of satellite equipment, 7,900 flood forecasting station for short message transmission from Beidou Satellite, 68 vehicles for emergency communication, 409 Unmanned Aerial Vehicle (UAV) and 5767 cluster communication terminals in operation. In terms of data collection and video monitoring, a total of 420,000 gathering points were available for water departments at and above the provincial level to receive various kinds of water-related information, among which 196,000 points were used for collecting data of hydrology, water resources and soil and water conservation. There were 224,000 gathering points for monitoring safety of large and medium reservoirs.

#### IV. Water Resources Utilization and Protection

**Water resources conditions.** The total national water resources in 2017 was 2876.12 billion  $\text{m}^3$ , 3.8% more than the normal years. Mean annual precipitation was 664.8 mm that was 3.5% more than the normal years and 8.9% less than the year before. By the end of 2017, total storage of 660 large and 3,547 medium-size reservoirs were 407.98 billion  $\text{m}^3$ , 8.26 billion  $\text{m}^3$  more than that in early 2017.

**Water supply capacity.** In 2017, the newly-increased water supply capacity reached 9.21 billion  $\text{m}^3$ . By the end of 2017, the total water supply capacity in China reached 856.24 billion  $\text{m}^3$ , including 58.17 billion  $\text{m}^3$  of water supplied by utilities at county level, 233.78 billion  $\text{m}^3$  by reservoirs, 205.14 billion  $\text{m}^3$  by river-lake diversion schemes, 168.65 billion  $\text{m}^3$  by river-lake pumping stations, 138.52 billion  $\text{m}^3$  by tube wells, 35.48 billion  $\text{m}^3$  by ponds, weirs and cellars, and 16.5 billion  $\text{m}^3$  by unconventional water sources.

**Water resources utilization.** In 2017, the total water supply amounted to 604.34 billion  $\text{m}^3$ , among which 81.8% came from surface water, 16.8% from underground water and 1.4% from other water sources. The total water consumption amounted to 604.34 billion  $\text{m}^3$ , of which domestic use amounted to 83.81 billion  $\text{m}^3$  or 13.9% of the total; industrial use 127.7 billion  $\text{m}^3$  or 21.1% of the total; agricultural water use 376.64 billion  $\text{m}^3$  or 62.3% of the total; artificial recharge for environmental and ecological use 16.19 billion  $\text{m}^3$  or 2.7% of the total. Comparing to that of the year before, water consumption increased by 0.32 billion  $\text{m}^3$ , in which agricultural water use decreased by 0.16 billion  $\text{m}^3$ , industrial use decreased by 3.1 billion  $\text{m}^3$ , and domestic water use and environmental flow increased by 1.65 billion  $\text{m}^3$  and 1.93 billion  $\text{m}^3$  respectively. Water consumption per capita in 2017 was 436  $\text{m}^3$  in average. The coefficient of effective irrigated

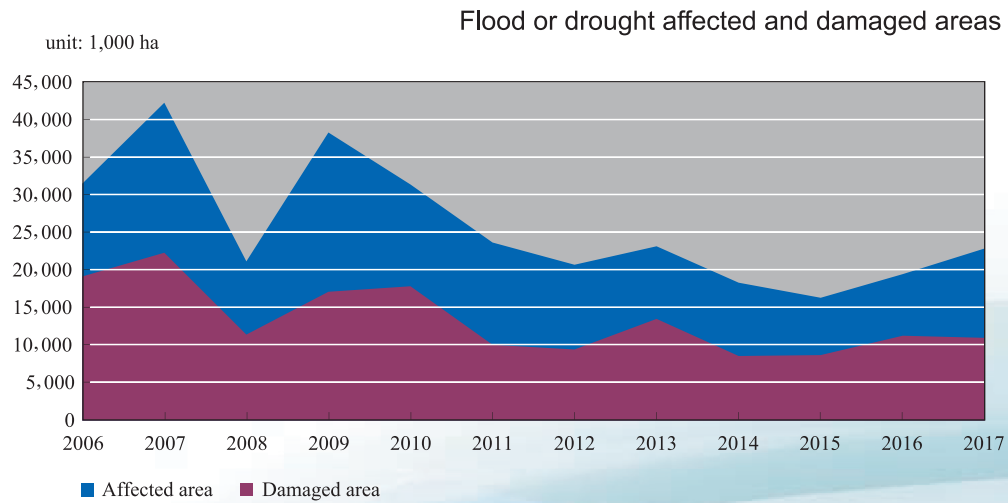
water use was 0.548. Water use of 10,000 Yuan GDP (at comparable price of the same year) was 73 m<sup>3</sup>. Water use of industrial production value added per 10,000 Yuan (at comparable price of the same year) was 45.6 m<sup>3</sup>. At the comparable price of the same year, water use of 10,000 Yuan GDP and water use of industrial production value added per 10,000 Yuan decreased by 6.4% and 8.2% less comparing to 2016. The rates of metering for domestic and industrial water uses were larger than 85%. The rate of metering for irrigation water use was 61%.

**Water quality of rivers and lakes.** According to water quality assessment on 245,000 km long of rivers, 78.5% of the river met the class-I to class-III water quality standard and 76.9% of the total complied with the water quality standard for national water function zones of major rivers and lakes.

## V. Flood Control and Drought Relief

In 2017, the overall damage caused by flood and water-logging disasters was relatively less than other years, with an average loss rate was 0.26% of the year. A total of 5.196 million ha of cultivated land were affected by floods, 2.781 million ha of farmland had no harvest, 55 million people affected, 316 people died, and 39 were missing. A total of 140,000 houses were destroyed and 104 cities suffered from inundation. The disasters resulted in 214.3 billion Yuan of direct economic losses, among which the losses with water infrastructures reached 34.5 billion Yuan. Provinces suffered from severe flooding include Hunan Province, Jilin Province, Guangdong Province, Guangxi Autonomous Region, Jiangxi Province, Hubei Province and Shaanxi Province. Death toll or people missing caused by mountain flood took 64% of the total. The direct economic loss caused by typhoons took 16% of the total loss as a result of flood and waterlogging disasters.





In 2017, no large scale drought occurred in the whole country and the percentage of annual losses caused by drought disasters was 0.05%. The seriously affected areas include provinces or autonomous region of Inner Mongolia Autonomous Region, Heilongjiang Province, Shanxi Province, Liaoning Province, Shandong Province, Hubei Province and Gansu Province. The affected farmland was 9.946 million ha and areas with no harvest reached 4.49 million ha, with a direct economic losses of 43.8 billion Yuan. A total of 4.78 million urban and rural population and 5.14 million man-feed big animals and livestock suffered from temporary drinking water shortage.

In 2017, the funds allocated to defense extraordinary floods and droughts amounted to 3.84 billion Yuan, among which 3.29 billion Yuan for extraordinary floods and 0.55 billion Yuan for extraordinary droughts. Thanks to the efforts of flood control, 1.904 million ha of cultivated land were prevented from inundation and 139 times of flooding in cities were avoided, resulting in economic benefits amounting to 67.2 billion Yuan. Drinking water was provided to 4.04 million people

in rural and urban areas as well as 3.15 million big animals and livestock in order to alleviate temporary water shortage. The area with anti-drought measures reached 18.521 million ha that prevented a loss of 22 billion kg of grain. The accumulative inputs for flood disaster relief include 5.7 million person-time, 39,000 vessel-time, 253,000 shifts of transportation and 225,000 shifts of mechanical equipment. The consumed materials valued 2.15 billion Yuan. The person-time of emergency evacuation was 7.13 million. There were 2.67 million tube wells, 43,000 pumping stations, 4.56 million mobile devices and 0.69 million various kinds of water transporting vehicle employed for drought relief.



## VI. Water Management and Reform

**River (Lake) chief system.** By the end of 2017, river chief system had been fully implemented in 25 provinces, autonomous regions or municipalities such as Beijing and Tianjin and also sped up pace of establishment in 6 provinces or autonomous regions of Liaoning Province, Guangxi Autonomous Region, Tibet Autonomous Region, Shaanxi Province, Gansu Province and Xinjiang Autonomous Region. More than 300,000 river chiefs were named at four levels of province, city, county and township. In some provinces, river chiefs were appointed for villages and more than 600,000 river chiefs including river inspectors and river guards were assigned at the village level. All provinces, autonomous regions or municipalities set up river chief offices at provincial, municipal, county levels, and counterpart management systems with a working pattern of taking responsibilities by the government leaders, taking the lead by water resources departments, coordinated by other governmental departments and participated by the whole society.

**Most stringent water resources management.** Performance evaluation of 31 provinces, autonomous regions or municipalities on implementation of stringent water resources management system during the year of 2017 had been conducted by 9 ministries including Ministry of Water Resource and NDRC. The approvals for water allocation of 20 trans-boundary rivers were implemented. Assessment on water resources bearing capacity of Yangtze Economic Belt was completed. 889 million m<sup>3</sup> were diverted by Phase-I of Eastern Route Scheme to Shandong Province, 4515 million m<sup>3</sup> were diverted by Phase-I of Middle Route Scheme to Beijing、Tianjin、Hebei Province and Henan Province. The water supply capacity of these areas have been significantly improved. Integrated regulation of water resources of major rivers including Yellow River and Heihe has been strengthened that prevented drying up of Yellow River mainstream for 18 consecutive years and Juyanhai East in the downstream of Heihe River for 13 consecutive years. By taking

county area as the basic assessment unit, we began to construct of water-saving society. There were 65 counties (districts) in 8 provinces or autonomous regions or municipalities of Beijing and Inner Mongolia Autonomous Region passed the final evaluation. The pilot project of 105 water ecological civilization cities has made smooth progress, among which 41 pilots passed check and acceptances. Control of groundwater abstraction had been proceeded in Hebei Province that reduced 2.02 billion  $\text{m}^3$  of groundwater withdrawal in rural areas. The reduced groundwater abstraction in water-receiving areas of Phase-I of Eastern and Middle routes of South-to-North Water Diversion was 1.523 billion  $\text{m}^3$  that takes 69.2% of the recent target. There were 7 pilot projects completed for water entitlement trading. 6 pilot counties of water property right were advanced, and their pilot scheme had been completed to be implemented. China Water Exchange completed 31 entitlement trading with an amount of 807 million  $\text{m}^3$ . 41 deals were completed with a total trading volume of 1443 million  $\text{m}^3$  of water and trading investment of 0.899 billion Yuan.

**Water affairs management.** By the end of 2017, a total of 2626 water authorities or water resources bureaus being in charge of water affair management established in the whole country, accounting for 81.65% of the total administrative regions above the county level. Among 1531 established water authorities, there were 4 at provincial level, 9 at sub-provincial level, 216 at prefecture or city level, and 1302 at county level. There were 2360 water plants operated by utilities under these water authorities, with 496,000 km of water supply pipes, a daily self-water supply capacity of 164 million  $\text{m}^3$ , among which the daily surface water supply capacity was 143 million  $\text{m}^3$  and daily groundwater supply was 21 million  $\text{m}^3$ . The total quantity of water supply was 33.9 billion  $\text{m}^3$  with a service population of 317 million.

**Construction and management.** By the end of 2017, there were 14,366 water



utilities included in the list for water management system reform, and adjusted and streamlined to 13,991 water utilities through cancel and merger, with a reduction of 2.6% comparing to the number of organizations before the reform. A total of 29.62 billion Yuan had been allocated to 13,991 water utilities for covering cost of managerial staff and operation and maintenance, which covered 88.4% of the total. Among which, 17.52 billion Yuan were allocated to cover the staff expenses of public service, which accounted 95.6% of the total; 12.10 billion Yuan allocated to cover operation and maintenance of public service facilities, which accounted 79.6% of the total. Reform of management system by separating functions of administration with operation had been implemented in 13,014 utilities, accounted for 93% of the total. By the end of 2017, the approved national water scenery spots reached 832, including 362 reservoirs, 182 natural rivers and lakes, 175 lake or riverine cities, 47 wetlands, 30 irrigation districts and 36 soil conservation areas.

**Reform in rural water resources management.** In 2017, the funding from private sector to high-efficient water-saving irrigation and provision of safe drinking water amounted to 13% and 30% of the total investments respectively. About 55% of small irrigation and drainage systems and drinking water supply facilities had clarified proper rights with awarding of property certificates, utilization permits and operation and maintenance responsibility agreements. Focusing on three types of projects and 13 reform measures, the pilot projects in 100 counties that implemented reform of property right of farmland waterworks and innovative operation and maintenance mechanism had completed. The coverage rates of cost of basic personal expenses in large irrigation districts and pumping station as well as operation and maintenance of public-good waterworks were 70% and 56% respectively.

**Water pricing reform.** In 2017, NSDC, Ministry of Finance (MOF), MWR, MOA

and Ministry of National Land and Water resources had boosted water pricing reform of agricultural water use and issued the legal documents of *Notice on Promoting Agricultural Water Pricing Reform* and *Methods for Performance Evaluation of Agricultural Water Pricing Reform*. The reform of pricing system for agricultural water use has been incorporated into the Stringent Water Resources Management System and accountability evaluation of governors being responsible for grain safety. By the end of 2017, there had been 700 counties and 100 irrigation districts carried out reform of pricing system for agricultural water use, with an area of 52 million mu, among which about 32 million mu were newly-added in 2017. Great achievements had been made in the areas of implementing reform, with an average water-saving of 100 m<sup>3</sup> per mu and 20% shorten of irrigation time in average.

**Water resources planning and early-stage work.** In 2017, there were 12 water resources plans approved by central government agencies, among which three plans including *Special construction Scheme for Erosion Control of National Slope Farmland in 13th Five-Year Plan* were approved by National Development Reform Commission ( NDRC ), 9 plans approved by the Ministry of Water Resources ( MWR ) . The third national water resources survey and assessment was initiated. Steady progress had been made by major water project planning at the national level. Comprehensive planning for major river basins and tributaries has been accelerated. Water plans in key national strategies has been proceeded. In 2017, a total of 21 projects were delivered to NDRC for approved by the Ministry of Water Resources, with a total investment of 105.337 billion yuan. In 2017, a total of 21 projects were approved by NDRC, including 18 feasibility study reports and 3 project plans, with a total investment of 198.085 billion Yuan. There were 9 preliminary designs approved by MWR, with a total investment of 187.697 billion Yuan.

**Soil and water conservation.** In 2017, a total of 32,300 soil and water conservation plans of construction projects being examined and approved, covering a scope of 531.01 km<sup>2</sup> for protection and control. A total of 7,900 soil and water conservation projects completed check and acceptance. By the end of 2017, there were 31 provinces (autonomous regions or municipalities) promulgated the implementing provisions or regulations of Soil and Water Conservation Law; and 25 provinces (autonomous regions or municipalities) made public the methods (standards) for the collection, utilization and management of compensation fee for soil and water conservation.

**Rural hydropower management system.** In 2017, *Evaluation Standard for Green Small Hydropower* (SL 752-2017) was promulgated. In 2017, there were 44 small hydropower projects in 12 provinces (autonomous regions, municipalities) awarded the title of green small hydropower station. By the end of 2017, the plans for water energy resources development of 3200 small and medium rivers were revised and completed, which covered nearly all proposals before 2025. Standardization for safety production of rural hydropower stations had been advocated and 2100 hydropower station of the kind has been completed.

**Reservoir resettlement.** There were 266 concentrated relocation sites constructed and centralized newly-constructed housing of 5.19 million km<sup>2</sup>. The resettled population was 147,315, among which 144,329 were relocated rural residents and 2986 relocated urban residents. A total of 165,552 of resettled people were arranged



for production activities, among which 79,534 arranged for agricultural production, 11,591 people compensated on a yearly basis, 50,686 compensated by monetary means (arranged by themselves), 14165 people joined pension plans, 1082 people seeking help from their relatives and friends and 8494 people with other arrangements.

**Safety supervision.** In 2017, there were 12 production accidents with 19 people dead. MWR, river basin authorities and water resources departments at provincial level organized 1824 inspection teams and 8258 experts for on-site inspection and overall investigation of safe production situation, and also inspections during flood season and highly-hazard chemicals as well as special inspections on electric fire risks. A total of 37,682 potential hazard were properly handled. It was announced that 60 enterprises approved to meet the level-1 evaluation standard for water safety production, including 38 water and hydropower constructing companies, 9 legal persons of water projects and 13 water project management units. Evaluation of about 8600 project leaders and peoples in charge of safe production management had been taken. MWR sent 10 batches or groups including 159 missions for inspection of 347 projects. There were 144 feedbacks of inspection and rectification comments that were delivered one by one to each province regarding prominent problems. Self-inspection of provincial water administrative departments had been encouraged and a total of 449 inspection groups were sent out for reviewing 1342 projects and 773 announcements were delivered for rectification.

**Legislation and administrative law enforcement.** In 2017, revision of 4 water administrative laws and regulations were completed. Through evaluations on 43 ministerial norms and standards, and about 200 normative documents, MWR abolished 3 and amended 17 ministerial norms and standards; abolished 13, expire 14 and amended 13 normative documents. In 2017, the investigated illegal



cases totaled 14, 413 and 12, 070 or 83. 74% resolved. A total of 942 water disputes were mediated and 903 resolved. There were 21 administrative review cases and 28 administrative responses settled by the Ministry of Water Resources.

**Administrative permits.** There were 2005 applications accepted by MWR and 1840 water-related administrative approvals or permits authorized or extended, including 35 project plan approvals, 9 preliminary design reports of water construction projects, 126 water abstraction licenses, 10 approvals for newly-constructed, rehabilitated or expanded pollution discharge outlets in rivers and lakes, 17 evaluation reports of flood impact by non-flood control project, 291 plans of construction projects within the jurisdiction of river courses, approval of 1 within the river channel management ( not including sand mining in river channel ), 20 licenses of sand excavation, 61 approvals of soil and water conservation plan of production and construction projects, 37 check and acceptance of soil and water conservation plans of construction projects, approval of establishment or reorganization of 4 national hydrological stations, approval of 1 special hydrological stations, 18 hydrological monitoring projects for impact of construction at upper and lower of National Basic Hydrological Stations, 751 qualification approvals ( including new application, extension, adding of new items or promotion ) for construction supervisors of water resources projects; 194 qualification identifications ( including application and extension ) for quality supervisors of water-related projects.

**Water science and technology.** A total of 430 million Yuan had been allocated to science and technology projects, including 22 special-subject and water-related scientific research projects listed in the National Key Research and Development Plan-Effective Development and Utilization of Water Resources, and 36 demonstration project for water technologies. There were 3 water technological achievements won the National Sci-Tech Advance Award ( all second prize ) and 2

project won the second prize of National Technological Innovation Award. By the end of 2017, the numbers of national level or ministerial level labs were 12, and technical research centers were 15. Special funds for procurement and repairing of equipment of national scientific institutions amounted to 118.35 million Yuan. A total of 107.44 million Yuan had been allocated from central government finance as operation expenses for basic scientific studies of public research institutes. The currently effective ministerial norms and standards was totaled 845 and under draft water-related technical standard reached 137.

**International cooperation.** In 2017, a total of 4 water-related international cooperation agreements were signed. There were 9 multilateral and bilateral high-level round-table meetings and technical exchange symposiums or seminars held. There were 5 foreign funded projects financed by the World Bank, Asian Development Bank, Global Environment Fund under smooth implementation. Bilateral cooperation project between China and Switzerland, Denmark and France as well as 8 international science and technology cooperation projects were steadily progressed.

## VII. Current Status of Water Sector

**Water-related institutions.** By the end of 2017, the legal entities engaged in water activities within the administrative jurisdiction at county level or above were totaled 24,371 that had 1.072 million employers. Among which governmental organizations was 2720 with 129,000 public services; public organizations 17,393 with 577,000 employers, 3,902 enterprises with 360,000 employers, 356 societies and other institutions with 6,000 employers. There were 25 general construction contractors awarded highest qualification for water resources and hydropower project construction; 239 general construction contractors awarded grade-I qualification.

**Employees and salaries.** By the end of 2017, the employees of water sector were totaled 932, 000, a 2. 1% decrease comparing to that the year before. Of which the employees with long-term post amounted to 904, 000, a 2. 3% decrease. In the employees with long-term post, the staff working in the agencies directly under the Ministry of Water Resources was 64, 000, a 0. 7% decrease over the year before; the staff working in local agencies was 840, 000, a 2. 4% decrease. The total salary for the employees with long-term post in the whole country was 73. 91 billion Yuan, and the annual average salary per employee with long-term post was 83, 534 Yuan.

**Employees and Salaries**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Number of in service staff/10 <sup>4</sup> persons	106. 8	105. 6	103. 7	106. 6	102. 5	103. 4	100. 5	97. 1	94. 7	92. 5	90. 4
Of which, staff of MWR and agencies under MWR/10 <sup>4</sup> persons	7. 2	7. 2	7. 2	7. 4	7. 5	7. 4	7. 0	6. 7	6. 6	6. 4	6. 4
Local agencies /10 <sup>4</sup> persons	99. 6	98. 4	96. 5	96. 3	95. 0	96. 0	93. 5	90. 4	88. 1	86. 1	84
Salary of in-service staff/10 <sup>8</sup> Yuan	211. 3	234. 4	264. 7	297. 9	351. 4	389. 1	415. 3	451. 4	529. 4	640. 5	739. 1
Average salary / (Yuan/person)	19, 573	22, 143	25, 633	28, 816	34, 283	37, 692	41, 453	46, 569	55, 870	69, 377	83, 534



**Local water service systems.** By the end of 2017, there were 29,351 water stations established at the township (river basin or district) level. There were 83,000 farmer water users cooperative organizations established for management of 360 million mu of irrigated land that accounted to 35.3% of the total effective irrigated areas of national farmland.





**Main Index of National Water Resources Development (2012 – 2017)**

Indicators	unit	2012	2013	2014	2015	2016	2017
1. Irrigated area	10 <sup>3</sup> ha	67,780	69,481	70,652	72,061	73,177	73,946
2. Farmland irrigated area	10 <sup>3</sup> ha	62,491	63,473	64,540	65,873	67,141	67,816
Newly-increased in 2017	10 <sup>3</sup> ha	2,151	1,552	1,648	1,798	1,561	1,070
3. Water-saving irrigated area	10 <sup>3</sup> ha	31,217	27,109	29,019	31,060	32,847	34,319
Highly-efficient water-saving irrigated area	10 <sup>3</sup> ha	14,126	14,271	16,114	17,923	19,405	20,551
4. Irrigation districts over 10,000 mu	Unit	7,756	7,709	7,709	7,773	7,806	7,839
Irrigation districts over 300,000 mu	Unit	456	456	456	456	458	458
Farmland irrigated areas in irrigation districts over 10,000 mu	10 <sup>3</sup> ha	30,087	30,216	30,256	32,302	33,045	33,262
Farmland irrigated areas in irrigation areas over 300,000 mu	10 <sup>3</sup> ha	11,260	11,252	11,251	17,686	17,765	17,840
5. Rural population accessible to safe drinking water	%				76	79	80
Centralized water supply system	%				82	84	85
6. Flooded or waterlogging area under control	10 <sup>3</sup> ha	21,857	21,943	22,369	22,713	23,067	23,824
7. Controlled or improved eroded area	10 <sup>4</sup> km <sup>2</sup>	103.0	106.9	111.6	115.5	120.4	125.8
Newly-increased	10 <sup>4</sup> km <sup>2</sup>	4.4	5.3	5.5	5.4	5.6	5.9
8. Reservoirs	Unit	97,543	97,721	97,735	97,988	98,460	98,795
Large-sized	Unit	683	687	697	707	720	732
Medium-sized	Unit	3,758	3,774	3,799	3,844	3,890	3,934
Total storage capacity	10 <sup>8</sup> m <sup>3</sup>	8,255	8,298	8,394	8,581	8,967	9,035
Large-sized	10 <sup>8</sup> m <sup>3</sup>	6,493	6,529	6,617	6,812	7,166	7,210
Medium-sized	10 <sup>8</sup> m <sup>3</sup>	1,064	1,070	1,075	1,068	1,096	1,117

Continued

Indicators	unit	2012	2013	2014	2015	2016	2017
9. Total water supply capacity of water projects in a year	10 <sup>8</sup> m <sup>3</sup>	6,142	6,183	6,095	6,103	6,040	6,043
10. Length of dikes and embankments	10 <sup>4</sup> km	27.2	27.7	28.4	29.1	29.9	30.6
Cultivated land under protection	10 <sup>3</sup> ha	42,597	42,573	42,794	40,844	41,087	40,946
Population under protection	10 <sup>4</sup> people	56,566	57,138	58,584	58,608	59,468	60,557
11. Total water gates	Unit	97,256	98,192	98,686	103,964	105,283	103,878
Large-sized	Unit	862	870	875	888	892	893
12. Total installed capacity by the end of the year	10 <sup>4</sup> kW	24,881	28,026	30,183	31,937	33,153	34,168
Yearly power generation	10 <sup>8</sup> kWh	8,657	9,304	10,661	11,143	11,815	11,967
13. Installed capacity of rural hydropower by the end of the year	10 <sup>4</sup> kW	6,569	7,119	7,322	7,583	7,791	7,927
Yearly power generation	10 <sup>8</sup> kWh	2,173	2,233	2,281	2,351	2,682	2,477
14. Completed investment of water projects	10 <sup>8</sup> Yuan	3,964.2	3,757.6	4,083.1	5,452.2	6,099.6	7,132.4
Divided by different sources							
(1) Central Government investment	10 <sup>8</sup> Yuan	2,033.2	1,729.8	1,648.5	2,231.2	1,679.2	1,757.1
(2) local government investment	10 <sup>8</sup> Yuan	1,464.5	1,542.0	1,862.5	2,554.6	2,898.2	3,578.2
(3) domestic loan	10 <sup>8</sup> Yuan	265.6	172.7	299.6	338.6	879.6	925.8
(4) foreign funds	10 <sup>8</sup> Yuan	4.1	8.6	4.3	7.6	7.0	8.0
(5) enterprises and private investment	10 <sup>8</sup> Yuan	113.4	160.7	89.9	187.9	424.7	600.8
(6) bonds	10 <sup>8</sup> Yuan	5.2	1.7	1.7	0.4	3.8	26.5
(7) other sources	10 <sup>8</sup> Yuan	78.3	142.1	176.5	131.7	207.1	235.9
Divided by different purposes							
(1) flood control project	10 <sup>8</sup> Yuan	1,426.0	1,335.8	1,522.6	1,930.3	2,077.0	2,438.8
(2) water resources project	10 <sup>8</sup> Yuan	1,911.6	1,733.1	1,852.2	2,708.3	2,585.2	2,704.9
(3) soil and water conservation and ecological recovery	10 <sup>8</sup> Yuan	118.1	102.9	141.3	192.9	403.7	682.6

Continued

Indicators	unit	2012	2013	2014	2015	2016	2017
(4) hydropower projects	10 <sup>8</sup> Yuan	117.2	164.4	216.9	152.1	166.6	145.8
(5) capacity building	10 <sup>8</sup> Yuan	59.6	52.5	40.9	29.2	56.9	31.5
(6) early-stage work	10 <sup>8</sup> Yuan	40.7	40.7	65.1	101.9	174.0	181.2
(7) others	10 <sup>8</sup> Yuan	291.1	328.2	244.2	337.5	636.2	947.5

**Notes:**

1. The data in this bulletin do not include those of Hong Kong, Macao and Taiwan.
2. Water-saving Irrigated area in 2013 is integrated with data of first national census for water. Other key indicators for water development and statistical data in 2012 is also integrated with the data of first national census for water. Among which, the length of embankment is further clarified as grade-V or above after the data is integrated with that of first national census for water.
3. The statistics of the number of irrigation districts over 10,000 mm from 2012 is based on designed irrigated area.
4. Statistics of rural hydropower refer to the hydropower stations with an installed capacity of 50,000 kW or lower than 50,000 kW.



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