



# 聚焦稳增长：绿色投资支撑绿色复苏

Sustainable Energy for a Prosperous China Forum

Focusing on Steady Growth: Underpinning Green Recovery with Green Investment

## 专家观点精粹

A Selection of Expert Opinions



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中国的经济目前仍然处于疫情冲击期，但疫情没有改变经济基本面，当前应出台见效快的措施稳增长。比如：更加精准科学地防控疫情、积极扩大消费、着力稳定房地产市场、提高治理效能等。

对于能源消费总量和经济增长的关系，要在多重政策目标中实现平衡，既不能过也不能不干，既要坚定不移地推进，也不能毕其功于一役。实现碳达峰、碳中和，并不是要把高耗能产业都砍掉。我们要做的是要把高碳的能源变成低碳的能源，所以未来高耗能未必就一定是高排碳的。要鼓励高耗能的企业、项目自己建设或者是合作开发新能源。

Although China's economy is still in the shock period of the pandemic, the epidemic has not changed the economic fundamentals, and measures with quick results should be introduced to stabilize growth at the moment. For example, more precise and scientific prevention and control of the epidemic, active expansion of consumption, efforts to stabilize the real estate market, and improving the effectiveness of governance.

To maintain the relationship between total energy consumption and economic growth, a balance should be struck in the combined objectives from multiple policies, such that neither should efforts be overspent nor underspent. We have to push forward with determination, but not in one fell swoop. Moreover, carbon peak and carbon neutrality goals do not mean cutting out all energy-intensive industries. What we should do is to convert high-carbon energy into low-carbon energy, so that in the future, high energy consumption does not have to be high carbon emission. It is necessary to encourage energy-intensive enterprises and projects to develop new energy, either independently or cooperatively.



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投资不仅创造需求，还影响供给，绿色投资能形成新的绿色供给能力，带动供需两端的绿色复苏。今年中国所设定的年度经济增长目标是5.5%左右。绿色投资会是稳增长的重要抓手。国家发改委日前已透露，今年扩大有效投资将首先聚焦重点领域，比如：实施煤电节能降碳改造，推进石化、钢铁等行业节能降碳改造等等。近月来，乌克兰危机持续发酵，带动全球能源价格剧烈波动，国际天然气、原油、电力短缺问题愈演愈烈。全球多国纷纷表示加大可再生能源部署，加速向新能源领域全面转型。

但需要看到能源转型不是一蹴而就的，需要坚持通盘谋划，先立后破，能源转型必须以保障能源安全作为前提，能源“饭碗”要牢牢端在自己手中。

Investment not only creates demand, but also affects supply. Green investment can form new green supply capacity and drive green recovery at both ends of supply and demand. China has set an annual economic growth target of around 5.5% this year, and green investment will be an important driver for steady growth. The National Development and Reform Commission (NDRC) has revealed that the expansion of effective investment this year will first focus on key areas, such as implementing energy-saving and carbon-reducing transformation of coal power, and promote energy-saving and carbon-reducing transformation of petrochemical, steel and other industries. In recent months, the Ukraine crisis has continued to intensify, driving global energy prices to fluctuate dramatically, and international shortages of natural gas, crude oil and electricity have intensified. Many countries around the world intend to increase the deployment of renewable energy and accelerate the overall transformation to new energy sector.

However, energy transformation is not achievable overnight, which makes it so important to adhere to the overall planning, and make breakthrough step by step. Energy transition must be to ensure energy security as a prerequisite.



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稳增长就要稳能源，经济活动靠能源驱动，能源生产和消费也是经济增长的重要组成部分。能源基金会的分析表明，“十四五”期间，传统产业数字化升级、绿色改造，绿色低碳城镇化和现代化城市建设，绿色低碳消费领域，可再生能源友好的能源和电力系统建设等领域，总投资潜力可达44.6万亿元。

到2050年面向碳中和的直接投资可达至少140万亿，包括碳中和相关投资，将在未来三、四十年为经济增长提供可观推动力。

当然，在现实中，要实现上述投资潜力需要打通一些政策堵点：一是要有更明确的减控排目标，为投资者和技术研发者建立长期稳定的预期；二是要加速建立碳定价的体系，使实际的碳价显著高于边际减碳的成本，以形成减碳的盈利，为减碳投资者和技术研发者提供足够的激励。总而言之，大力投资发展可再生能源等非化石能源，将同时对经济增长、能源安全、能源结构低碳转型、环境质量改善和气候稳定做出贡献，是一个一举多得战略性措施。

To stabilize growth one needs to stabilize energy. Energy drives economic activity, while energy production and consumption are important components of economic growth. Our analysis on the 14th Five-Year Plan period suggests that CNY 44.6 trillion worth of gross projected investment could have been poured into digital transformation/upgrading and green transformation of traditional industries, green/low-carbon urbanization, modernization of urban construction, green/low-carbon consumption, sources friendly to renewable energy, as well as power system construction.

Moreover, direct investment aimed towards carbon neutrality could reach at least CNY 140 trillion by 2050, which, together with investments related to carbon neutrality, will provide a substantial boost to economic growth in the next three to four decades.

Of course, certain policy red-tapes will need to also be removed to maximize the full potential of the aforesaid investment. This can be done by, first and foremost, clarifying the targets for emission reduction and control, as well as setting stable long-term expectations for investors and technology developers. Secondly, the establishment of carbon pricing system should also be accelerated to make actual carbon price significantly higher than the marginal cost of carbon reduction, so that profits can be made from carbon reduction, providing sufficient incentives for carbon reduction investors and technology researchers. In short, investing heavily in non-fossil energy, such as renewable energy, is a strategic measure with multiple benefits: it can simultaneously contribute to economic growth, energy security, low-carbon transformation of energy structure, environmental quality improvement and climate stability.



## 王汉锋 Wang Hanfeng

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为了达到“碳中和”目标，电力行业的绿色投资需求最大，总需求达到67.4万亿元；其次为交通运输和建筑行业，总需求分别为37.4万亿元和22.3万亿元。由于碳排放的负外部性具有跨区域、跨期限的特点，如果要克服这种外部性，就必须采取全球性的措施，同时需要公共部门、私人部门和金融机构等多方主体共同参与。

“绿色投资需要的资金对接的就是绿色金融。”中国目前正在全方位建立整个绿色金融体系，但对标绿色金融发展领先的区域，比如欧洲仍有一些差距。从整个国际上看，中国对绿色金融的重视程度在快速上升，甚至包括在更为细节的ESG体系，中国也是在快速拥抱。

To achieve carbon neutrality, the power sector harbors the highest demand for green investment, accounting for CNY 67.4 trillion in total, followed by transportation and construction sectors, estimated at CNY 37.4 trillion and CNY 22.3 trillion respectively. Since the negative externality of carbon emission is cross-regional and cross-term, global measures must be taken, and the participation of multiple actors such as public sector, private sector and financial institutions is required. It is a well-known principle that “green finance is the capital needed for green investment”. China is now in the process of building a comprehensive green finance system, but there are still some gaps compared with regions that are leading the way in green finance development, such as the Europe. Not only has China’s interest on green finance on the international arena been growing rapidly, but it has also permeated deeper and deeper into niches like the ESG system.



## 李俊峰 Li Junfeng

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能源转型中的投资机会是显而易见的。“现有中国能源消费量50亿吨标煤，未来仍要增长20%左右，现有的非化石能源占比不到16%，即不到8亿吨，2060年能源消费量60亿吨，碳中和要求80%来自于非化石能源，即40亿吨。因此，未来的40年间，非化石能源产能需要增加32亿吨，平均每年需要增加0.8亿吨，这是年均化的投资机会。”能源转型是一个渐进的过程，不可能一蹴而就，需要破立并举，需要循序渐进。

Energy transformation provides obvious investment opportunities. “At present, China consumes 5 billion tons of standard coal for energy; this number is still expected to increase by about 20% in the future. The proportion of non-fossil energy is less than 16%, i.e., less than 800 million tons. Assuming that the energy consumption in 2060 is 6 billion tons and that we need 80%, i.e., 4 billion tons, of non-fossil energy to realize carbon neutrality, it means that over the next 40 years, non-fossil energy capacity needs to be added by 3.2 billion tons, or an average of 80 million tons per year. Try also seeing this as annual investment opportunities.” Energy transformation is a gradual process — something that cannot be achieved overnight. It is therefore important that we simultaneously rebuild what we scrapped and progress in the order as planned.



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从2000年起，中国经济飞速发展，一个重要原因是房地产、基础设施建设（交通设施、水利设施等）的拉动。房屋和基础设施建设无疑是本世纪我国经济增长的主要动力，但也是碳排放增长的主要原因。当前，我国已经初步完成房屋建设和基础设施建设，可以满足现代化强国和人民生活水平提高的需要。因此，不能再以盖房作为拉动经济的主要手段，应该把整个驱动经济增长、社会发展的主线，从盖房子转到“双碳”战略上去，投资拉动应该从房屋建设转移到零碳能源系统重构上去。由化石能源全面转为零碳能源需要关注三达投资领域：一，新型城镇建筑配电系统和只能有序电动车充电桩的建设；二、新型农村能源系统的三，使流程工业低品位余热供给系统成为建筑供暖和非流程工业生产用热源。新能源建设领域的投资还需要有关部门统一规划，地方部门、企业分头投资建设，避免挑肥拣瘦和重复建设造成资源和投资的浪费。此外，必须有配套的新政策机制支持，建立新的价格体系，才能通过市场机制，激励各方投资。

China's economy has witnessed a rapid development since 2000, driven mainly by the development of the real estate and infrastructure construction (transportation facilities, water conservancy facilities, etc.). Housing and infrastructure construction are undoubtedly the main drivers of China's economic growth in this century, but they are also the main cause of growth in carbon emissions. At present, China has initially completed the construction of housing and infrastructure to meet the needs of a modern international powerhouse able of improving its people's living standards. Therefore, building houses shall no longer be the main driver of economy; this baton for socioeconomic growth should be relayed to the "dual carbon" strategy, while investment should be shifted to rebuilding a zero-carbon energy system. To complete this groundbreaking shift from fossil fuels to zero-carbon energy, attention should be paid to the following three major investment fields. First, the construction of new urban building power distribution systems and electric vehicle charging piles; second, the construction of new rural energy systems; third, repurposing low grade waste heat supply systems used in the process industry as heat sources for building heating and production for non-process industries. Relevant departments should also be involved in the investment of new energy construction via a unified planning, with local departments and enterprises investing in construction separately to avoid waste of resources and investment caused by over-prudence and redundancy in construction. In addition, there must be a new policy mechanism that supports the establishment of a new price system, so as to encourage investment on the back of the market's mechanism.



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在数字化和智能化趋势下，可聚焦新基建方向，重点关注5G、泛半导体、智能化应用产业链的投资机会；在双碳目标绿色化趋势下，可聚焦低碳新能源利用设备产业链、储能和节能减排产业链的投资机会；此外，内循环建设和供应链重构趋势将带来先进制造补缺和国产替代投资机会，可重点关注航空航天军工制造产业链、关键及高端通用机电设备及零部件产业链国产化。关于减碳工作，利用数字技术助力碳减排是数字化转型的应有之义，能发挥重要作用。基于目前对数字化减排实践调研基础上的初步估算，数字技术的减碳作用能现实工业减碳约13%—22%、建筑减碳约23%—40%、交通减碳约10%—33%，全社会减碳约11.9%—21.7%。

Under the trend of digitalization and intelligentization, attention should be paid to the construction of new infrastructure, focusing on the investment opportunities offered by 5G, pan-semiconductors and the AI-driven applications industry chain. Under the trend of green development and "dual carbon" goals, attention should be paid to the investment opportunities in the industrial chains featuring low-carbon new energy utilities, energy storage and energy conservation/emission reduction. Also, under the trend of internal cycle construction and supply chain reconstruction, where investment opportunities are brought to advanced manufacturing and domestic alternatives. Attention should be paid to the aerospace manufacturing industry chain, as well as the localization of key and high-end general electromechanical equipment/parts industry chain. With regards to carbon reduction, using digital technologies to facilitate carbon reduction is an integral part of digital transformation and can play an important role therein. According to the preliminary estimation based on the current research on digital emission reduction practices, digital technologies can help reduce carbon footprint by about 13%-22% for industries, 23%-40% for buildings, 10%-33% for transportation, and 11.9%-21.7% for the whole society.



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在多方合力下，我国新能源汽车发展综合收益也见到新成效。截至2021年底，我国新能源汽车整车累计消费约1.6万亿元人民币，带动上下游产业链产值约4.8万亿元。当前，新能源汽车产业是我国经济转型下的升级方向，是国家战略性新兴产业。新能源汽车正朝着绿色、环保、智能方向发展，在中国提出的“双碳”目标下，大力推动新能源汽车产业发展，将有助于加快建立健全绿色低碳循环发展经济体系。与此同时，新能源汽车拓宽产业边界，其对经济的拉动也将越发活跃。新能源汽车发展，表面上看改变的是汽车产业，实际上影响和改变的是多个关联产业和汽车生态。新能源汽车产业生态正在逐步演变成汽车、能源、交通、通信等多领域多主体参与的“网状生态”，产业融合创新进一步助力经济高质量发展。新能源汽车供应链全球化属性增强，开放自主是可持续的关键。最后，从国家层面来说，在相关的国家碳达峰、碳中和行动方案中，对新能源汽车发展目标要有所体现。

With the joint efforts of various parties, China's comprehensive income from new energy vehicles has saw new results. By the end of 2021, China's total consumption of new energy vehicles reached CNY 1.6 trillion, while the output of relevant upstream and downstream industry chains is estimated to be CNY 4.8 trillion. At present, the new energy automobile industry serves as the compass under China's economic transformation and a national strategic emerging industry. Given that new energy vehicles are developing in the direction of green, environmental protection and intelligence, under China's "dual carbon" goals, promoting the development of new energy vehicles will help accelerate the establishment and improvement of an economic system for green, low-carbon and circular development. In addition, expanding the boundaries of the industry will also allow new energy vehicles to drive the economy more actively. The development of new energy vehicles seems to change only the automobile industry, but in fact, it affects and changes multiple related industries and the automobile ecology. The ecology of new energy vehicle industry is gradually evolving into a "network ecology" involving multiple sectors and entities, such as automobiles, energy, transportation and communication, with the presence of which industrial integration and innovation will only further promote high-quality economic development. As the new energy vehicle supply chain is becoming increasingly globalized, openness and independence are the keys to maintaining sustainable development. Finally, at the national level, relevant national carbon peak and carbon neutral action plans shall reflect the development goals of new energy vehicles.



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根据有关测算，碳中和将为中国带来数百万亿规模投资需求，80%至90%需求集中在能源、建筑、交通、和工业四大行业。从能源领域投资需求看，主要表现在三方面：一是电力清洁化；二是终端电气化；三是非电减排带来的投资需求。多领域的技术进步和低碳转型都值得金融机构密切关注，并且创新金融产品积极进行支持。金融机构要密切关注能源转型进展，把握市场机遇。实现“双碳”目标的核心是能源，在此过程中可能带来深刻的系统性变革，能源行业竞争结构、产业发展规律会产生较大变化。为推进能源转型，尽快实现“双碳”目标各种政策积极落地，在这方面金融机构要进行政策研究。此外，金融机构还要借助互联网、云计算、大数据等技术手段优化审批流程，提高投放效率。在实现化石能源比例下降的过程中，要控制化石能源低碳转型风险，探索转型风险的识别工具，把能耗、环境因素等纳入评级模型，对能源转型可能带来的转型风险进行量化分析和风险管理，支持转型企业顺利、稳健地实现低碳绿色转型。

According to estimates, carbon neutrality will bring trillions of yuans of investment demand to China, with 80%-90% of the demand concentrated in the four major industries: energy, construction, transportation and industry. The investment demand from the energy industry is mainly reflected in the following three aspects: cleaner power, terminal electrification, and reduction of emission generated by non-electric units. Financial institutions should pay closer attention to technological progress and low-carbon transformation in various fields, and provide active support with innovative financial products. Financial institutions should also be more attentive to the progress of energy transformation, so as to seize market opportunities. Energy is the key to achieving the "dual carbon" goals, over the course of which, profound and systematic changes may happen, including great changes of the competitive structure and industrial development patterns of the energy industry. In order to promote energy transformation and realize the "dual carbon" goals as soon as possible, financial institutions should carry out related policy research. Furthermore, financial institutions also need to optimize the approval process with the help of technological means such as the Internet, cloud computing, and big data, so as to improve the efficiency of investment. While reducing the proportion of fossil energy, efforts should be made to control the risks of low-carbon transformation of fossil energy, explore the identification tools of transformation risks, incorporate energy consumption and environmental factors into rating models, conduct quantitative analysis and management of possible transformation risks caused by energy transformation, as well as support enterprises to smoothly and steadily realize low-carbon and green transformation.