

《中国农业发展战略研究》专题快报

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【动态资讯】

1. China is hot spot of ground-level ozone pollution

【Cooperative Institute for Research in Environmental Sciences】 In China, people breathe air thick with the lung-damaging pollutant ozone two to six times more often than people in the United States, Europe, Japan, or South Korea, according to a new assessment. By one metric—total number of days with daily maximum average ozone values (8-hour average) greater than 70 ppb—China had twice as many high ozone days as Japan and South Korea, three times more than the United States, and six times more than Europe. “We find that in the most populous urban regions of Eastern and Central China, there are more than 60 days in a calendar year with surface ozone levels exceeding the Chinese national ozone air quality standard,” said Lin Zhang of Peking University, lead author of the study in the current issue of Environmental Science & Technology Letters.

链接:

<https://cires.colorado.edu/news/china-hot-spot-ground-level-ozone-pollution>

2. NSF funds new projects to ‘connect dots’ (and data) to address longstanding, multi-scaled environmental problems

【National Science Foundation】 The National Science Foundation (NSF) is investing \$9 million in nine new projects to research biosphere processes and their complex interactions with climate, land use and invasive species at regional to continental scales. The awards are funded through NSF's MacroSystems Biology and Early NEON (National Ecological Observatory Network) Science program. MacroSystems Biology is an approach that works to identify the scales of biological processes and patterns and their cross-scale interactions

that can operate in non-linear, surprising ways. The new research awards will explore ecological interactions that operate across spatial and temporal scales. Findings from environmental, biological and ecological research can be incomplete if interacting scales are not considered (e.g., studies of local ecosystem effects that ignore the impact of changing global processes).

链接:

https://www.nsf.gov/news/news_summ.jsp?cntn_id=296453&org=NSF&from=news

3. Vertical Farming for the Future

【USDA】 Imagine walking into your local grocery store on a frigid January day to pick up freshly harvested lettuce, fragrant basil, juicy sweet strawberries, and ripe red tomatoes all of which were harvested at a local farm only hours before you'd arrived. You might be imagining buying that fresh produce from vertical farms where farmers can grow indoors year-round by controlling light, temperature, water, and oftentimes carbon dioxide levels as well. Generally, fresh produce grown in vertical farms travels only a few miles to reach grocery store shelves compared to conventional produce, which can travel thousands of miles by truck or plane. Beyond providing fresh local produce, vertical agriculture could help increase food production and expand agricultural operations as the world's population is projected to exceed 9 billion by 2050. And by that same year, two out of every three people are expected to live in urban areas. Producing fresh greens and vegetables close to these growing urban populations could help meet growing global food demands in an environmentally responsible and sustainable way by reducing distribution chains to offer lower emissions, providing higher-nutrient produce, and drastically reducing water usage and runoff.

链接:

<https://www.usda.gov/media/blog/2018/08/14/vertical-farming-future>

4. Drivers of Improvements in Global Food Security

【USDA】 In 2018, 21 percent of the 3.7 billion people in 76 low- and middle-income countries do not have access to sufficient food for an active and healthy life, i.e. not food secure. However, by 2028, only 10 percent of the projected 4.3 billion people in these countries will be food insecure. USDA's Economic Research Service recently released the annual International Food Security Assessment 2018-2028, which measures and projects

food security in 76 low- and middle-income countries that receive or have received U.S. food aid. Why do we monitor and measure global food security? This report helps us understand the causes of global food insecurity and agencies determine countries where food aid is needed. For example, Yemen and South Sudan and parts of several other countries have suffered from famines in 2018 alone. In many other countries, poverty rates are high and people cannot afford food. In order to address chronic food insecurity, we need a way to measure the extent of food insecurity in order to target the countries where progress is or is projected to be slow.

链接:

<https://www.usda.gov/media/blog/2018/08/21/drivers-improvements-global-food-security>

5. Copper May be the Key to ‘Growing’ More Land and Feeding the World

【USDA】 You know what they say about land they’re not making any more of it. In fact, when it comes to agriculture, the amount of available farmland is shrinking. When you couple that with a world population of nearly 10 billion by 2050, it’s not unusual to ask if there will be enough food to eat. To answer that question, two Cornell University scientists are working with wheat in a way that may both improve crop yield and increase the amount of productive land farmers have to work with. USDA’s National Institute of Food and Agriculture is supporting this research with a \$500,000 Agriculture and Food Research Initiative grant. Dr. Olena Vatamaniuk and Dr. Mark Sorrells are studying the physiological, molecular, and genetic mechanisms of how plants process the micronutrient copper. It’s known that a deficiency in copper compromises crop fertility and reduces grain/seed yield; what’s not well-known is how copper uptake and internal transport is achieved and regulated, or how copper impacts wheat fertility.

链接:

<https://www.usda.gov/media/blog/2018/08/23/copper-may-be-key-growing-more-land-and-feeding-world>

6. 非洲农业发展潜力及中非农业合作建议报告发布

【中国农业新闻网】非洲的发展潜力有多大？中国企业到了非洲，有哪些机遇？自2007年，在津巴布韦开始农业示范中心建设运营方面的工作，德邦大为科技有限公司已经在非洲耕耘了11年。董事长刘汉武说，中非之间的关系是相互的，中国援助非洲的同时，

非洲也为中国提供了很多支持，比如政治上的支持、资源上的分享，以及产能的转移。非洲有广阔的市场和优质的资源，企业在非洲发展农业产业可以大展拳脚。据介绍，“南南合作/国际发展合作洞见”是2018年由中国农业大学南南农业合作学院/人文与发展学院发起的一个对话栏目，针对南南合作和国际发展领域的前沿和焦点问题展开，尤其关注与发展知识、发展合作和发展治理等相关的农业和农村发展、减贫、社会转型等领域，旨在通过对话和交流，展现该领域前沿观点、实践探知和经典议题。

链接:

http://www.farmer.com.cn/xwpd/jjsn/201808/t20180827_1401573.htm

7. 中国农情遥感监测为147个国家和地区提供服务

【中国农业新闻网】新华社北京8月28日电（记者董瑞丰）记者日前从中国科学院空天信息研究院获悉，该院研发的全球农情遥感速报系统已同时为全球147个国家和地区提供农情信息服务。据了解，27日至29日在海南三亚举行的数字“一带一路”农业与粮食安全工作组2018年年度研讨会上，还计划将中国研发的全球农情遥感云服务平台，定制成“一带一路”沿线国家及地区直接可用的农情监测云平台。中科院空天信息研究院研发的全球农情遥感速报系统已持续开展农情遥感监测工作20年。该系统基于遥感和地面观测数据，独立评估全球及国家尺度的作物长势、产量及其相关信息，目前是国际三大农情遥感监测系统之一。随着全球人口继续增长，人们对粮食数量与质量的需求同步提升，引发了人们对粮食安全的担忧。秘书处总部设在中科院空天信息研究院的“数字丝路”国际科学计划，为此专门成立数字“一带一路”农业与粮食安全工作组，旨在建立一个农业和粮食安全信息共享共同体，应对粮食安全相关信息缺失的问题，并与“一带一路”相关国家及地区一道，服务于消除贫困和“零饥饿”的可持续发展目标。

链接:

http://www.farmer.com.cn/xwpd/jjsn/201808/t20180828_1401838.htm

8. 甘肃：守护祁连山畜牧再升级

【中华人民共和国农业农村部】祁连山是我国重要生态屏障，是黄河流域重要水源地和生物多样性保护优先区域，也是甘肃省石羊河、黑河、疏勒河三大内陆河的发源地和水源涵养区，生态区位极其重要。甘肃省以实施新一轮草原补奖政策为契机，全面贯彻落实党中央、国务院关于加强祁连山自然保护区生态环境保护与修复的决策部署，坚持系统治理、绿色发展的原则，一手抓生态恢复治理，一手抓传统畜牧业转型升级，保护区落实禁牧面积801.48万亩，草畜平衡面积1550.52万亩，年发放补奖资金2.09亿元，2016-2018年，累计减少和转移天然草原放牧牲畜31.17万羊单位。2017年底，保护区草

甸草原植被盖度达到84%，荒漠草原植被盖度达到28%，草原综合植被盖度达到60.7%。牛羊舍饲比例提高到75%，畜牧业产值69.53亿元，较2011年增长71%。新一轮草原补奖政策发挥了重要作用，取得了显著成效。随着草原补奖政策的持续实施，祁连山地区草畜矛盾得以缓解，传统畜牧业生产方式加速转变，呈现出草原生态稳定向好、牧民收入持续增长的良好发展势头。

链接:

http://www.moa.gov.cn/xw/zwdt/201808/t20180816_6155817.htm

9. 韩长赋主持召开农村人居环境整治工作督导调研汇报会提出 加快推进农村人居环境整治 打好乡村振兴的“当头炮”

【中华人民共和国农业农村部】本网讯 8月23日，中央农办主任、农业农村部部长韩长赋主持召开农村人居环境整治工作督导调研汇报会，听取2018年农村人居环境整治工作第一批13个督导组督导调研情况。会议强调，要深入学习贯彻习近平总书记重要指示和中央部署要求，充分认识做好改善农村人居环境工作的特殊重要意义，不断强化始终同党中央保持高度一致的思想自觉和行动自觉，切实增强推进改善农村人居环境工作的主动性自觉性，提高政治站位，履职尽责担当，加快推进农村人居环境整治，打好乡村振兴的“当头炮”，切实增强农民群众的幸福感、获得感。会议指出，改善农村人居环境是乡村振兴战略的重要内容，牵涉面广、涉及部门多，涵盖农业农村生产生活生态方方面面，需要进一步加强统筹、协调配合。有关部门要共同努力，心往一处想、劲往一块使，协同作战，形成推进改善农村人居环境的工作合力。要注意调动地方工作积极性，将农村人居环境整治作为市县领导班子和领导干部实绩考核的重要内容，充分发挥市场作用，调动社会力量参与农村人居环境整治，形成推进工作“一盘棋”新格局。

链接:

http://www.moa.gov.cn/xw/zwdt/201808/t20180823_6156234.htm

10. 山东：农村人居环境整治实现良好开局

【中华人民共和国农业农村部】本网讯 近年来，山东省以美丽乡村建设为主线，按照《农村人居环境整治三年行动方案》部署要求，扎实推进农村人居环境整治，农村面貌明显提升，各项工作实现良好开局。重视抓好顶层设计。今年5月，印发《山东省农村人居环境整治三年行动实施方案》，提出“一年提标扩面、两年初见成效、三年全面提升”目标，对全省农村人居环境整治工作作出部署安排。实施方案坚持因地制宜、高标定位，注重与《山东省乡村振兴战略规划（2018—2020年）》的联接、与“五个振兴”工作方案的对接，细化量化各项重点任务。截至目前，全省17个市全部起草形成实施方

案初稿，全部137个县（市、区）正在制定实施方案。发挥规划引领作用。山东省把制定规划作为农村人居环境整治的基础性工作，按照“先规划后建设、先设计后整治”原则，科学编制规划，注重分类指导。目前，全省75%的县（市、区）编制了县域乡村建设规划、95%的乡镇编制了乡镇总体规划，48%的村庄编制了村庄规划，初步形成了县域村镇体系规划为纲领、村庄规划为主体的乡村规划体系。具体措施包括：重视抓好顶层设计；发挥规划引领作用；强化投入保障；全面推进“厕所革命”；加快推进农村生活垃圾治理长效化；梯次开展农村生活污水处理。

链接:

http://www.moa.gov.cn/xw/zwdt/201808/t20180828_6156458.htm

【行业报告】

1. 2016年中国水资源公报

发布源：水资源管理网

发布时间：2017-08-18

摘要：公报显示，2016年，全国生活用水821.6亿立方米，占用水总量的13.6%；工业用水1308.0亿立方米，占用水总量的21.6%；农业用水3768.0亿立方米，占用水总量的62.4%；人工生态环境补水142.6亿立方米，占用水总量的2.4%。与2015年相比，农业用水量减少84.2亿立方米，工业用水量减少26.8亿立方米，生活用水量及人工生态环境补水量分别增加28.1亿立方米和19.9亿立方米。

链接:

<http://agri.ckcest.cn/ass/2fe98774-8d90-46ed-b478-8275108805e0.pdf>

【文献速递】

1. Carrying capacity, carnivoran richness and hominin survival in Europe

作者：Jesús Rodríguez; Ana Mateos

文献源：Journal of Human Evolution,2018

摘要：Carrying capacity, the maximum biomass that an ecosystem can sustain over the long term, strongly influences several ecological processes and it is also one of the main determinants of biodiversity. Here, we estimate the carrying capacity (CC) of the late Early and early Middle Pleistocene ecosystems of Europe, using equations describing the relationship between CC and climatic variables observed in the present, as well as maps of inferred paleotemperature and paleoprecipitation. Maps of paleoclimate values were interpolated from the composite benthic stable oxygen isotope ratios and a transfer function was used to estimate ungulate carrying capacity (CCU) from the interpolated mean

annual temperature and annual precipitation values. Carnivoran carrying capacity was subsequently estimated from ungulate carrying capacity and the effect of CC on the carnivoran faunas was analyzed in 12 paleocommunities from Southern Europe. Our results show that carnivoran species richness is strongly related to ungulate carrying capacity in recent ecosystems, but the late Early Pleistocene paleocommunities from Southern Europe included much richer carnivore guilds than would be expected for a recent community with a similar ungulate carrying capacity. Thus, those late Early Pleistocene ecosystems supported a high number of carnivoran species, but the carnivoran biomass they could support was relatively low. Consequently, carnivorans occurred at low densities in Southern Europe compared to the recent African savanna ecosystems, but likely also compared to coeval East African ecosystems. Consequently, the first Homo populations that arrived in Europe at the end of the late Early Pleistocene found mammal communities consisting of a low number of prey species, which accounted for a moderate herbivore biomass, as well as a diverse but not very abundant carnivore guild. This relatively low carnivoran density implies that the hominin-carnivore encounter rate was lower in the European ecosystems than in the coeval East African environments, suggesting that an opportunistic omnivorous hominin would have benefited from a reduced interference from the carnivore guild.

链接:

<http://agri.ckcest.cn/ass/4fad4b02-6966-451c-96c8-49d23cb915d4.pdf>

2. Regional development policy in context of Europe 2020 Strategy

作者: Daniela Antonescu

文献源: Procedia Economics and Finance,2018

摘要: The regional development promotes the balanced development of the European Union and, similarly, in all member state is treated as an integral factor of the state economic and social policy. Also, it promotes the growth model proposed by the future Europe 2020 Strategy, including the necessity of meeting the societal challenges, and those related to employment in the regions and in the Member-States. The appraisal of the implementation of the regional policy, whose goals and priorities were defined in the national and European strategic documents, calls for a general and specific objectives and financial instruments of that policy. This article contains information's and elements about the next programming period and future regional policy of the European Union, in context of economic and social cohesion and convergence. From the perspective of the Europe 2020 Strategy, the regions shall continue to attract differentiated support depending on their

economic development level (GDP/per capita), as a clear distinction is made between “less developed” and “most developed” regions.

链接:

<http://agri.ckcest.cn/ass/47ea40b1-8b40-4e73-8ba1-a553bdf6f2ed.pdf>

3. Integrating landscape in regional development: A multidisciplinary approach to evaluation in Trentino planning policies, Italy

作者: Grazia Brunetta; Roberto Monaco; Emma Salizzoni; Francesco Salvarani

文献源: Land Use Policy,2018

摘要: The systematic integration of landscape dimension into general and sector-focused planning policies is one of the European Landscape Convention crucial points. This aspect is still poorly implemented in Italy, where landscape is often conceived as a field of action separate from the territorial context. The article presents the outcomes of a multidisciplinary research aimed at integrating landscape dimension into sector-focused policies, namely retail policies, in the Autonomous Province of Trento (Trentino-Alto Adige Region, Italy). The local government recently reformed its territorial retail development policies so as to comply with European reform regulations and with national decrees regulating the programming of services. It implemented the sector’s liberalization, but it did not give up the territorial planning and the conservation of the landscape values. In this context, a research was developed to evaluate retail development scenarios, and, more specifically, the opportunity to plan a Gross Leasable Area of territorial relevance. Two methods were used: an indicator matrix to assess landscape quality and a mathematical model to assess population mobility preferences among retail structures. This integrated evaluation approach allowed to highlight both the “rights of the landscape” and those of potential buyers. The outcomes of the research have been recently adopted by the APT regulatory framework on retail planning. The evaluation process actually acted as a process of collective learning, supporting political decision-making.

链接:

<http://agri.ckcest.cn/ass/7c7f7a0a-39e0-405e-bb36-d2be2b082e50.pdf>

4. Regional development assessment: Reflections of the problem-oriented urban planning

作者: Abdol Aziz Shahraki

文献源: Sustainable Cities and Society,2018

摘要: This paper reflects the regional/urban planning, design, and building problems. It

highlights local differences as important factors in the development process. As demands for new homes and towns increase the proportionality of urban development methods to the local situation must be respected. This in turn requires an increase in the professional regional recognition and practical experiences. This study reviews briefly the past, present and future of the underdevelopment cities. It applies a combination of semi structured interviews, a problem oriented method, POM, a benchmarking method, BM, a linear programming, and techniques of converting qualitative values to quantitative scores to assess the degree of sustainable urban development, SUD. The assessment has been done by introducing of indicators of sustainability, IS. Finally, this paper suggests a systematic program to develop a case study city. The program is useful in the similar cities everywhere.

链接:

<http://agri.ckcest.cn/ass/03a0b6e9-0c2c-4a9c-a11d-5797c365a062.pdf>

5. Dynamics of land use efficiency with ecological intercorrelation in regional development

作者: Zhan Wang; Jiancheng Chen; Wentang Zheng; Xiangzheng Deng

文献源: Landscape and Urban Planning,2018

摘要: Arguments about side effects of economic growth in urbanization call for deeper research on land use efficiency (LUE) from the perspective of urban planning for the coordination of social production and environmental conservation. Rural-urban migration increases rural household earning from part-time jobs at urban area. This social transformation increases the transportation demands and the risk of regional environmental degradation through ecological intercorrelation among urban-rural ecosystems. In this research, we aim to study how urban-rural ecological intercorrelation can dynamically determine the edge effects between backward-wave effects and spillover effects to affect dynamics of land use efficiency on the pathway of regional development. We analyze the marginal percentage changes of population growth and rural/urban income growth influence the dynamics of land use efficiency of Beijing-Tianjin-Hebei region (BTH). Empirical analysis results show that the urban income rises have weak spillover effects, while rural income growth primarily influences land use efficiency changes when urban-rural ecological intercorrelation is weak. We also test with or without the innovation impacts, and find both methods reporting the violation of normal economic development that in fact backward-wave effects exceed spillover effects in BTH. It implies that urban

income growth should drive more spillover effects when urban-rural ecological intercorrelation is strong, but in fact it fails in a highly urbanized region. Thus, it is debatable that the fast population growth is the root of environmental degradation, in fact, ecological intercorrelation determines the edge effects of regional economic scale. That affects the structural effects of urban-rural landscape changes being allocated by population and income rises dynamically. Policy implication for regional development is to identify landscape rights in advance to keep dynamics of land use efficiency in a relatively stable structure for coherently improving environmental quality and the standard of living.

链接:

<http://agri.ckcest.cn/ass/526edec7-5e20-482f-abf6-d4b0e48a9960.pdf>

6. Regional development boundary of China's Loess Plateau: Water limit and land shortage

作者: Shuai Wang; Bojie Fu; Haibin Chen; Yu Liu

文献源: Land Use Policy,2018

摘要: The planetary boundary concept aims to define the environmental limits within which humanity can safely operate in the global scale. Identification of the regional development boundary and solutions for problems therein is the basis of the local and global earth system sustainable operation. The Loess Plateau in China is an ideal area for studying the regional development boundary concept. After reviewing the main natural and anthropogenic changes on the Loess Plateau and their hydrological and social-economic effects during recent decades, we identified the water limit for large scale revegetation and the land shortage caused by the Grain for Green project as the most important determinants of the regional development boundary. Therefore, it is necessary to readjust the existing revegetation strategy according to the water capacity, including identifying the suitable priority zones and the corresponding species, density and management for keeping the planted ecosystem healthy. In addition, as an integrative mode of land management, gully reclamation can not only create cropland and conserve soil and water, but also strengthen the construction of agricultural infrastructure, foster large-scale agricultural operations and promote the development of rural economy.

链接:

<http://agri.ckcest.cn/ass/8a7916e0-efb0-410c-b5cf-7df59bc3e55f.pdf>

7. Water resources conservation and nitrogen pollution reduction under global food trade and agricultural intensification

作者: Wenfeng Liu; Hong Yang; Yu Liu; Matti Kummu, et al.

文献源: Science of the Total Environment,2018

摘要: Global food trade entails virtual flows of agricultural resources and pollution across countries. Here we performed a global-scale assessment of impacts of international food trade on blue water use, total water use, and nitrogen (N) inputs and on N losses in maize, rice, and wheat production. We simulated baseline conditions for the year 2000 and explored the impacts of an agricultural intensification scenario, in which low-input countries increase N and irrigation inputs to a greater extent than high-input countries. We combined a crop model with the Global Trade Analysis Project model. Results show that food exports generally occurred from regions with lower water and N use intensities, defined here as water and N uses in relation to crop yields, to regions with higher resources use intensities. Globally, food trade thus conserved a large amount of water resources and N applications, and also substantially reduced N losses. The trade-related conservation in blue water use reached $85 \text{ km}^3 \text{ y}^{-1}$, accounting for more than half of total blue water use for producing the three crops. Food exported from the USA contributed the largest proportion of global water and N conservation as well as N loss reduction, but also led to substantial export-associated N losses in the country itself. Under the intensification scenario, the converging water and N use intensities across countries result in a more balanced world; crop trade will generally decrease, and global water resources conservation and N pollution reduction associated with the trade will reduce accordingly. The study provides useful information to understand the implications of agricultural intensification for international crop trade, crop water use and N pollution patterns in the world.

链接:

<http://agri.ckcest.cn/ass/4652ea08-130d-450e-aa55-ebff12210c27.pdf>

8. Land-use changes and land policies evolution in China's urbanization processes

作者: Jing Wang; Yifan Lin; Anthony Glendinning, et al.

文献源: Land Use Policy,2018

摘要: Ensuring food security and sustainable development in China has been threatened by the dilemma of the rapidly growing consumption of the country's land resources. Research on the linkage between land-use changes and land policies in the process of industrialization

and urbanization has received increased attention in recent years. The present study was conducted to analyze the undergoing dynamics for Chinese land policies and land-use changes based on reliable land-use data and to develop a thorough understanding of the historical drivers and pathways of land-use changes and China's deep-seated land issues, as well as the social, political and economic factors involved. The results showed that land-use changes were linked closely to shifts in government land policies and socio-economic development in China. The evolution of land policies in China was the result of a path-dependent process, which included the reform of land use system, the economic development environment as well as a policy-making process that responded to short-term land development. The results also indicated that there have been considerable achievements regarding the land use system and land management in China. However, Chinese economic growth overly depended on investments as well as land finance, which were uncoordinated and unsustainable. The changes in land use were also the outcomes of the land policy failure. There is still a pressing need to reform land policies for more efficient and effective utilization of limited land resources; develop a trade-off and synergy among urban development, agricultural production and ecosystem preservation; differentiate land-use policies; allocate market-oriented land resource; and establish a national macro-control mechanism in collaboration with a coordinated land-use policy and basic legislation.

链接:

<http://agri.ckcest.cn/ass/f5073c6f-13e2-4d2d-ab94-409a01d07357.pdf>

9. Exploring under-utilised low carbon land resources from multiple perspectives: Case studies on regencies in Kalimantan

作者: Chun Sheng Goh; Birka Wicke; Lesley Potter, et al.

文献源: Land Use Policy,2018

摘要: Mobilising under-utilised low carbon (ULC) land resources for future agricultural production can help reducing pressure on high carbon stock land from agricultural expansion, particularly for deforestation hotspots like Kalimantan. However, the potential of ULC land is not yet well understood, especially at regency level which is the key authority for land-use planning in Indonesia. Therefore, this study explored ULC land resources for all regencies in Kalimantan. By analysing information from six monitoring domains, a range of indicators were derived to provide insights into the physical area of ULC land from various

perspectives. It was found that these indicators show largely different values at regency level. For example, regency Pulang Pisau has a substantial area of 'temporarily unused agricultural land' but a very limited area of 'low carbon land' this implies that not all 'temporarily unused agricultural land' is ready for future exploitation when assessing from different aspects. As a result of such diverging indicators, using a single indicator to quantify available ULC land resources is risky as it can either be an over- or underestimation. Thus, ULC land resources were further explored in the present paper by taking four regencies as case studies and comparing all the indicators, supported with relevant literature and evidence collected from narrative interviews. This information was used to estimate ULC land area by possible land-use strategies. For example, Gunung Mas was found to have a large area of low carbon land which is not occupied and might be suitable for oil palm deployment. However, the major limitation is that physical estimates cannot provide a complete picture of 'real' land availability without considering a broader range of socio-economic factors (e.g. labour availability). Therefore, physical land area indicators from different domains must be combined with other qualitative and quantitative information especially the socio-economic factors underlying land under-utilisation to obtain better estimates.

链接:

<http://agri.ckcest.cn/ass/fe1a78dd-3410-492f-8474-94edaf4423e7.pdf>

10. Physical resources assessment in a semi-arid watershed: An integrated methodology for sustainable land use planning

作者: Karuppusamy Balasubramani

文献源: ISPRS Journal of Photogrammetry and Remote Sensing, 2018

摘要: The study demonstrates the application of geospatial technologies to evaluate physical resources of semiarid watersheds and presents a comprehensive methodology applicable elsewhere. The selected Andipatti watershed, located in Theni district in the State of Tamil Nadu (India), is known for agricultural activities; however, haphazard planning, management practices and inadequate investments result in land and water resource degradation. Since most of the agricultural lands in developing countries are similar to these conditions, the present study is attempted as a case to develop a framework to assess the land and water resources potential, utilisation level and land suitability for agriculture; and to evolve better management strategies. The physical characteristics of the watershed were

studied based on insitu, remotely sensed and secondary data sources. Thematic layers were generated with the combination of remote sensing, image processing and GIS techniques. In order to characterize and quantify the watershed based on soil erosion and surface runoff rates, the revised universal soil loss equation (RUSLE) and natural resources conservation services curve number (NRCS-CN) were utilized. Data on water levels and geochemistry of water samples, collected from 36 dug wells were also utilized for this study. Sodium adsorption ratio (SAR) and electrical conductivity, as formulated by the US Salinity Laboratory (USSL) were utilized to examine the suitability of groundwater for irrigation purpose. The storie index has been used to assess the productivity of land using profile and textural characteristics of the soil. Keeping Food and Agricultural Organisation (FAO) guidelines as a reference, as many as 727 homogenous micro-land units were prepared. The physical land qualities and characteristics of each land unit were compared with the requirements of 13 major crops of the study area and suitable crops for each unit were identified. The individual suitability classes of all crops were compared using logical analysis and suitability crops for each land unit were determined under irrigated and rain-fed conditions. In order to integrate the results of these analyses and to suggest sustainable agricultural development measures, the study area was divided into 44 micro-watersheds. The information on land productivity, groundwater quality and existing land use/land cover patterns of the watershed were used to calculate land potential utilisation index and groundwater potential-utilisation ratio for all micro-watersheds. All the results of land and water resources assessment were compared and a proposed land use map was prepared. The findings suggest strategies for coping with sustainable agricultural practices for the present study area and provide an integrated methodology for future assessments elsewhere, especially in the developing countries.

链接:

<http://agri.ckcest.cn/ass/77eddf3f-1c61-4681-b115-ff28af0d873f.pdf>

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