

PROBLEM A: Eradicating Ebola 问题一:根除埃博拉

The world medical association has announced that their new medication could stop Ebola and cure patients whose disease is not advanced. Build a realistic, sensible, and useful model that considers not only the spread of the disease, the quantity of the medicine needed, possible feasible delivery systems, locations of delivery, speed of manufacturing of the vaccine or drug, but also any other critical factors your team considers necessary as part of the model to optimize the eradication of Ebola, or at least its current strain. In addition to your modeling approach for the contest, prepare a 1-2 page non-technical letter for the world medical association to use in their announcement.

世界医学学会已经宣布他们发现了新的药物可以阻止埃博拉病毒并能治愈病情不再恶化的病人。创建一个现实的、明智的和有用的模型，该模型不仅考虑了疾病的蔓延、需药物的量、可能可行的输送系统、交货地点、疫苗或药物的生产速度，也要包括你的团队认为必要的其他关键因素，该因素应作为优化根除埃博拉病毒模型的一部分，或者至少作为目前的应变的手段。除了提交本次比赛建立模型的方法外，还要提交一个 1-2 页的非技术性的信，作为世界医学协会在其公告使用的。

PROBLEM B: Searching for a lost plane 问题 2:寻找失去的飞机

Recall the lost Malaysian flight MH370. Build a generic mathematical model that could assist "searchers" in planning a useful search for a lost plane feared to have crashed in open water such as the Atlantic, Pacific, Indian, Southern, or Arctic Ocean while flying from Point A to Point B. Assume that there are no signals from the downed plane. Your model should recognize that there are many different types of planes for which we might be searching and that there are many different types of search planes, often using different electronics or sensors. Additionally, prepare a 1-2 page

non-technical paper for the airlines to use in their press conferences concerning their plan for future searches.

回忆失踪的马来西亚 MH370 飞机。建立一个通用的数学模型，协助“搜寻者”规划的一个有用的搜寻方案，寻找一架从 A 点飞到 B 点失踪的飞机，飞机可能坠毁在开放水域如大西洋、太平洋、印度、南或北冰洋。假设有从坠落的飞机上没有收到任何信号。你的模型应该确认我们可能搜索到的飞机有许多不同类型的，也有许多不同类型的搜索用飞机。这些飞机经常使用不同的电子设备或传感器。另外，准备一个 1-2 页的非技术的计划，作为航空公司在他们的新闻发布会使用的、关于他们未来搜索的计划。

ICM PROBLEMS ICM 的问题

PROBLEM C: Managing Human Capital in Organizations

Click the title below to download a PDF of the 2015 ICM Problem C.

问题 C:管理在组织中人力资本单击标题下面下载 PDF 2015 C ICM 的问题

[Managing Human Capital in Organizations](#)

管理在组织中人力资本

Managing Human Capital in Organizations

Building an organization filled with good, talented, well-trained people is one of the keys to success. But to do this, an organization needs to do more than recruit and hire the best candidates – they also need to retain good people, keep them properly trained and placed in proper positions, and eventually target new hires to replace those leaving the organization. Individuals play unique roles within their organizations, both formally and informally. Thus, the departure of individuals from an organization leaves important informational and functional components missing that need to be replaced. This is true for sports teams, commercial companies, schools and universities, governments, and almost any formal group or organization of people.

管理在组织中人力资本

建立一个组织满是优秀的,有才华的,训练有素的人是成功的关键之一。但要做到这一点,一个组织需要做到多招募和招聘最优秀的候选人,他们还需要保留优秀人才,使他们受到正确地训练和放置在适当的位置,并最终选用新员工来取代那些离开组织的。在他们的组织中个人扮演独特的角色,包括正式和非正式的。因此,个体从一个组织的离开会使重要的信息和功能组件缺失,需要更换。这适用于体育团队、商业公司、学校和大学、政府、和几乎任何正式的团体或组织的人。

Human resource (HR) specialists help senior leadership manage personnel by improving retention and motivation, coordinating training, and building good

teams. In particular, leaders seek to create an effective organizational structure, where people are assigned to positions appropriate to their talents and experience, and where efficient communication systems are in place to facilitate development of innovative ideas and quality products (commodities or services). These talent management and team building aspects of HR management are remaking many modern organizations.

人力资源(HR)专家帮助高层管理人员通过改进保留和激励、协调培训,建立良好的团队。特别是领导人寻求创建一个有效的组织结构,人们被分配到适合自己的才能和经验的岗位,以及高效的通信系统来促进发展的创新理念和优质的产品(商品或服务)。这些人才管理和团队建设方面的人力资源管理是许多现代组织重塑。

PROBLEM D: Is it sustainable?

Click the title below to download a PDF of the 2015 ICM Problem D.

D:问题是可持续的吗?单击标题下面下载 PDF 的 2015 D ICM 的问题。

[Is it sustainable?](#)

它是可持续的吗?

One of the largest challenges of our time is how to manage increasing population and consumption with the earth's finite resources. How can we do this while at the same time increasing equity and eradicating poverty? Since the beginning of the modern environmental movement in the 1960's, balancing human needs with the earth's health has been a topic of considerable debate. Are economic development and ecosystem health at odds? In order to reconcile this difficult balance, the concept of sustainable development was introduced in the 1980's.

我们这个时代最大的挑战之一是如何管理增长的人口和消费与地球的有限资源。我们如何能做到这一点,同时增加股本和消除贫困吗?年初以来现代环保运动在 1960 年代,平衡人类需求与地球的健康一直是一个相当大的争论的话题。是经济发展和生态系统健康格格不入?为了调和这一困难的平衡,可持续发展的概念,介绍了在 1980 年。

Sustainable development is defined by the 1987 Brundtland Report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Since its conception, sustainable development has become a goal for international aid agencies, planners, governments, and non-profit organizations. Despite this, striving towards a sustainable future has never been more imperative. The United Nations (UN) predicts the world's population will level at 9 billion people by 2050. This, coupled with increased consumption, places a significant strain on the earth's finite resources. Understanding that the earth is a system that connects both time and space is critical to sustainable development. Development must focus on needs (e.g., reducing the vulnerability of the world's poor) and limitations (e.g., the environment's ability to detoxify wastes). In 2012, the UN conference on sustainable development recognized that: "that poverty eradication, changing unsustainable and promoting sustainable patterns of consumption and production and protecting and managing the natural resource base of economic and social development are the overarching objectives of and essential requirements for sustainable development." Decreasing personal poverty and vulnerability, encouraging economic development, and maintaining ecosystem health are the pillars of sustainable development.

可持续发展由 1987 年布伦特兰报告定义为“发展既满足现代人的需求又不损害子孙后代的能力满足自己的需要。”概念以来,可持续发展已成为国际援助机构的目标,规划者,政府和非营利组织。尽管如此,努力迈向可持续发展的未来从来没有更多的当务之急。联合国(联合国)世界人口预计将在 90 亿人到 2050 年水平。这一点,再加上增加消费,地方地球有限资源紧张的局面。认识到地球是一个系统,连接时间和空间是可持续发展的关键。(如开发必须专注于需求。减少世界贫困人口)的脆弱性和局限性(如。环境解毒废物)的能力。2012 年,联合国可持续发展大会认识到:“消除贫困,改变不可持续的和促进可持续消费和生产模式和保护和管理自然资源基础的经济和社会发展的总体目标和基本要求是可持续发展。“减少个人贫困和脆弱,鼓励经济发展,和维护生态系统健康可持续发展的支柱。

Problem statement

The International Conglomerate of Money (ICM) has hired you to help them use their extensive financial resources and influence to create a more sustainable world. They are particularly interested in developing countries, where they believe they can see the greatest results of their investments.

问题陈述

国际企业集团的钱(ICM)已聘请你帮助他们使用广泛的金融资源和影响力来创建一个更可持续的世界。他们特别感兴趣的是发展中国家,他们相信他们可以看到他们的投资最大的结果。

Task 1: Develop a model for the sustainability of a country. This model should provide a measure to distinguish more sustainable countries and policies from less sustainable ones. It can also serve to inform the ICM on those countries that need the most support and intervention. Some factors may include human health, food security, access to clean water, local environmental quality, energy

access, livelihoods, community vulnerability, and equitable sustainable development. Your model should clearly define when and how a county is sustainable or unsustainable.

任务 1:开发一个模型,一个国家的可持续性。这个模型应该提供一个衡量区分更可持续的国家和政策和可持续的。它还可以用来通知 ICM 在那些最需要的国家的支持和干预。一些因素可能包括人类健康、食品安全、干净的水,当地的环境质量,能源获取、生计、社区脆弱性和公平可持续发展。时要清晰地定义您的模型和一个县是可持续的和不可持续的。

Task 2: Select a country from the United Nations list of the 48 Least Developed Countries (LDC) list

(<http://unctad.org/en/pages/aldc/Least%20Developed%20Countries/UN-list-of-Least-Developed-Countries.aspx>). Using your model and research from Task 1, create a 20 year sustainable development plan for your selected LDC country to move towards a more sustainable future. This plan should consist of programs, policies, and aid that can be provided by the ICM within a country based on their demographic, natural resources, economic, social and political conditions.

任务 2:从联合国列表选择一个国家的 48 个最不发达国家 (LDC) 列表 (<http://unctad.org/en/pages/aldc/Least%20Developed%20Countries/UN-list-of-Least-Developed-Countries.aspx>)。使用您的模型和任务 1 的研究,为你创建一个 20 年可持续发展计划选择 LDC 国家走向一个更可持续的未来。这个计划应该包括计划、策略和 ICM 所提供的援助,可以在一个国家根据其人口、自然资源、经济、社会和政治条件。

Task 3: Evaluate the effect your 20-year sustainability plan has on your country's sustainability measure created in Task 1. Predict the change that will occur over the 20 years in the future by implementing your plan in your evaluation. Based on the selected country, you may need to consider additional environmental factors such as climate change, development aid, foreign investment, natural disasters, and government instability. The ICM would like to get the "most bang for their buck", so determine which programs or policies produce the greatest effect on the sustainability measure for your country. Identifying highly effective strategies to be implemented is the ultimate goal of the ICM to create a more sustainable world.

任务 3:评估影响你 20 年可持续性计划已经在你的国家的可持续性衡量任务 1 中创建。预测的变化将发生在未来的 20 年通过实施你的计划在你的评价。基于所选择的国家,您可能需要考虑额外的环境因素如气候变化、发展援助、外国投资、自然灾害,以及政府的不稳定。ICM 希望获得最大利益,所以确定哪些项目或政策的可持续性措施产生最大的影响。识别非常有效的战略的最终目标是实现 ICM 创建一个更可持续的世界。

Task 4: Write a 20-page report (summary sheet does not count in the 20 pages) that explains your model, your sustainability measure, your sustainability development plan, and the effect of your plan based on your model and the country's environment. Be sure to detail the strengths and weaknesses of the model. The ICM will use your report to invest in sustainability development intervention strategies for specific LDC countries. Good luck in your modeling work!

任务 4:写 20 页的报告(汇总表不计算在 20 页)这就解释了你的模型,你的可持续性措施,可持

续性发展计划,你的计划根据你的模型的影响和国家的环境。一定要详细模型的优点和缺点。ICM 将使用你的报告投资可持续性发展为特定 LDC 国家干预策略。祝你好运在你的建模工作!

Possible Resources

UN sustainable development knowledge platform

(<http://sustainabledevelopment.un.org>)

Ecological footprint

(http://www.footprintnetwork.org/en/index.php/GFN/page/footprint_basics_overview/)

World Bank Data (<http://data.worldbank.org>)

International Institute for Sustainable Development (<https://www.iisd.org/sd/>)

可能的资源

联合国可持续发展知识平台(<http://sustainabledevelopment.un.org>)

生态足迹(http://www.footprintnetwork.org/en/index.php/GFN/page/footprint_basics_overview/)

世界银行的数据(<http://data.worldbank.org>)

国际可持续发展研究所(<https://www.iisd.org/sd/>)

References

World Commission on Environment and Development (WCED). 1987. *Our Common Future*. New York: *Oxford University Press*, 1987, 8.

United Nations. The future we want. Resolution adopted by the General Assembly. 66th Session of the General Assembly, 123rd plenary meeting; 2012 July 27. New York: UN; 2012 Sep 11 (Resolution A/RES/66/288) [cited 2013 Jul 23]. Available at:

http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/66/288&Lang=E.

引用

世界环境与发展委员会(指)。1987年。我们共同的未来。纽约:牛津大学出版社,1987年,8。联合国。我们想要的未来。联合国大会通过的决议。第66届联合国大会,第123次全体会议,于2012年7月27日。纽约:联合国,2012年9月11日(决议/RES/66/288)(引用2013年7月23日)。可以在:http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/66/288&Lang=E。

Other useful Sources

Bell, Simon and Stephen Morse. 2008. Sustainability Indicators: measuring the immeasurable. *Earthscan*, London.

Daly, Herman. 1990. Towards some operational principles of sustainable development. *Ecological Economics*, 2(1990) 1-6.

Kates, Robert W., Thomas M. Parris, and Anthony A. Leiserowitz. 2005. What is sustainable Development: Goals indicators, values, and practices.

Environment: Science and Policy for Sustainable Development, Volume 47, Number 3, pages 8–21.

其他有用的资源

钟,西蒙和斯蒂芬·莫尔斯。2008。可持续性指标:测量不可估量的。增长,伦敦。

戴利,赫尔曼。1990。对可持续发展的一些操作原则。生态经济学、2(1990)1-6。

凯特,罗伯特 W。托马斯·m·帕里斯和安东尼 Leiserowitz。2005。什么是可持续发展:目标指标,价值观,和实践。可持续发展环境:科学与政策、47 册,3 卷,页面数量在 8 至 21。