Towards Zero-Emission Mobility Workshop

Organizers: Energy Foundation China Innovation Center for Energy and Transportation (iCET)

Co-organizer: China Clean Transportation Partnership (CCTP)

PANEL 2 第二小节

 The Future of Electric, Shared and

 Autonomous Mobility

 电动汽车、共享出行和自动驾驶的未来

PANEL 2 The Future of Electric, Shared and Autonomous Mobility



Mr. Anthony Eggert Transportation Program Director ClimateWorks Foundation



Dr. Daniel Sperling, Founding Director ITS UC Davis



Ms. Sandra Retzer Head of Sustainable Urbanisation, Transportation, Energy at GIZ China



Dr. Christoph Wolff Head of Mobility World Economic Forum (WEF)



Ms. Debs Schrimmer Senior Transportation Policy Manager Lyft



Mr. Shawn Qin Director of Global Government Affairs, Mobike

Anthony Eggert Transportation Program Director, ClimateWorks

Anthony Eggert is a director at ClimateWorks Foundation which mobilizes philanthropy to solve the climate crisis and ensure a prosperous future. Anthony comes to ClimateWorks with 20 years of public and private sector experience working on clean energy technologies and policies. Prior to ClimateWorks, Anthony served as the founding director of the UC Davis Policy Institute for Energy, Environment and the Economy dedicated to leveraging university expertise to inform better policy. Anthony public sector experience includes serving as an appointee of Governors Jerry Brown and Arnold Schwarzenegger including as Senior Advisor to the Chair of the California Air Resources Board, Commissioner of the California Energy Commission and Deputy Secretary of California Environmental Protection Agency where he helped implement California's landmark clean energy and climate policies. Anthony's started his career as an automotive engineer and program manager at Ford Motor Company working on regulatory compliance and advanced vehicle technology development. Anthony received a bachelor degree in mechanical engineering at University of Wisconsin-Madison and master degree in transportation technology and policy at UC Davis.

Anthony Eggert先生

气候工作基金会交通项目主任

安东尼·艾格特(Anthony Eggert)是气候工作基金会的主任,该基金会组织慈善事业来解决气候危机,并确保未来的繁荣。安东尼来到气候工作基金会,拥有20年的公共和私营部门从事清洁能源技术和政策的工作经验。在加入气候工作基金会之前,安东尼曾担任加州大学戴维斯分校能源、环境和经济政策研究所的创始主任,致力于利用大学专业知识为更好的政策提供信息。安东尼的公共部门经验包括担任州长杰里·布朗和阿诺德·施瓦辛格的被委任者,包括加州空气资源委员会主席,加州能源委员会专员和加州环境保护局副局长,在职时他帮助实施了加州的标志性清洁能源和气候政策。安东尼的职业生涯始于福特汽车公司的汽车工程师和项目经理,致力于监管合规和先进的车辆技术开发。安东尼拥有威斯康星大学麦迪逊分校机械工程学士学位和加州大学戴维斯分校交通技术与政策硕士学位。

Dr. Daniel Sperling

Founding Director of the Institute of Transportation Studies at the UC, Davis

Dr. Daniel Sperling is Distinguished Professor of Civil Engineering and Environmental Science and Policy, and founding Director of the Institute of Transportation Studies at the University of California, Davis (ITS-Davis). He holds the transportation seat on the California Air Resources Board and served as Chair of the Transportation Research Board of the National Academies in 2015-16. Among his many prizes are the 2013 Blue Planet Prize from the Asahi Glass Foundation Prize for being "a pioneer in opening up new fields of study to create more efficient, low-carbon, and environmentally beneficial transportation systems." He served twice as lead author for the IPCC (sharing the 2007 Nobel Peace Prize), has testified 7 times to the US Congress, and provided 20 keynote presentations in the past year. He has authored or co-authored over 250 technical papers and 13 books, including Three Revolutions: Steering Automated, Shared, and Electric Vehicles to a Better Future (Island Press, 2018), is a regular contributor to Forbes, an Energy Expert contributor to Wall Street Journal, is widely cited in leading newspapers, and been interviewed many times on NPR radio (~10 in past year)

丹尼尔·斯伯林 博士

加州大学戴维斯分校(ITS-Davis)交通研究所的创始主任

丹尼尔·斯伯林(Daniel Sperling)博士是土木工程与环境科学与政策的杰出教授,也是加州大学戴维斯分校(ITS-Davis)交通研究所的创始主任。他拥有加州空气资源委员会的运输领域席位,并在2015 - 2016年担任美国国家科学院交通研究委员会主席。他的众多奖项包括来自朝日玻璃基金会的2013年蓝色星球奖,因为他是"开辟新研究领域和创造更高效、低碳、环保的运输系统的先驱之一"。他曾两次担任联合国政府间气候变化专门委员会(共享2007年诺贝尔和平奖)的主要作者,曾七次在美国国会上作证,并在过去一年中做了20次主题演讲。他撰写或合著了250多篇技术论文和13本书,其中包括《三大革命:自动驾驶、共享汽车和电动汽车,通往更美好的未来》(岛屿出版社,2018),他是《福布斯》的定期撰稿人,是《华尔街日报》的能源专家撰稿人。他被各大报纸广泛引用,被美国国家公共电台多次采访(过去一年约有十次)。

Ms. Sandra Retzer

Head of Sustainable Urbanisation, Transportation, Energy at GIZ China

Sandra is responsible for Sino-German policy dialogues and technical cooperation projects in the fields of energy, electro-mobility, low carbon transport and sustainable urbanisation. In the past 20 years, Sandra has been working for different transnational companies in large-scale infrastructure, airport, renewable energy and energy storage projects. Before joining GIZ, Sandra served as Managing Director Asia-Pacific of Younicos AG, a German company specialized in the management of battery energy storage technologies. Her previous work has given Sandra vast opportunities to travel and she has had the privilege of working on projects in more than 20 countries in the past two decades.

Sandra Retzer女士

德国国际合作机构可持续城镇化、交通运输与能源领域主任

Sandra负责中德政策对话和能源、电动性能、低碳交通和可持续城市化的合作项目。在过去的20 年里,她曾经供职于不同的跨国公司,负责大型基础设施、机场、可再生能源和能源储存项目。在加入GIZ之前,她曾经是德国专注于电池能源储存企业Younicos AG的亚太区的管理总监。她之前丰富的工作经历给予她在20多个国家和地区的项目管理经验。



Intelligent and Connected Vehicles (ICVs) in China

12. September 2018 | San Francisco | Panel 2



SANDRA RETZER HEAD OF

SUSTAINABLE URBANISATION, TRANSPORTATION, ENERGY GIZ China



SWOT Analysis of ICV in China





of ICV in China





Strengths



Strong government support on national and local level



Advanced state of digital infrastructure



Strong industry in connectiviybased technologies



High social acceptance of innovative technologies

Status Quo

Opportunities



China is the world's largest market for passenger vehicles, NEVs and ride-hailing



Top-down approach to public policy-making

Potential



Not "restricted" by international agreeements such as 1968 Vienna Convention or UN/ECE Rules

ICV Development



Weaknesses



Restrictive regulations for road testing and HD mapping



Insufficiently developed standards system



Medium road quality and complex traffic environment



Relatively low number of ICVrelated patents

Status Quo

Threats



Dispersed responsibilities and conservative testing approach could hinder innovation



Large number of industry players could lead to diverging standards and low collaboration



Negative incidents related to vehicle safety, network security



Lack of integration between ICV and remaining transport system

Potential

ICV Development



Can China's Ambitious Targets be Reached?





Thank you for your attention ! 谢谢您的关注!

Sandra Retzer

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http://www.sustainabletransport.org/ icv.sustainabletransport.org



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Christoph Wolff, PhD World Economic Forum (WEF) Head of Mobility

Dr. Christoph Wolff is the Global Head of Mobility and Member of the Executive Committee at the World Economic Forum since June 2018. He oversees the Forum's work with Partners from the Automotive, Supply Chain, Aerospace and Airline/Tourism/Travel Sector. He is leading the Forum's System Initiative "Future of Mobility" that includes Projects on transition to "Autonomous, Shared and Electric Mobility", on "Drones and Tomorrow's Airspace", on "Biometrics and Block-Chain in travel" etc.

Christoph Wolff博士 *世界经济论坛 出行领域主任*

Christoph Wolff博士是世界经济论坛(WEF)的全球出行领域主任和执行委员会成员(自2018年6 月起)。他监督了论坛与来自汽车、供应链、航空航天和航空/旅游/旅游部门的合作伙伴的合作。 他正引领着论坛的系列倡议"出行的未来",包括向"自主、共享和电动交通"过渡、"无人机和未来航 空"、"出行中的生识别与区块链"等项目。



COMMITTED TO IMPROVING THE STATE OF THE WORLD

Autonomous and Urban Mobility

Christoph Wolff, Head of Mobility Global Climate Action Summit, September 12, 2018



Project Timeline

2015	2016	2017
Consumer acceptance	Go Boston 2030	Future modal-mix research
Customer research	AV strategy development	Conjoint study with 2,400 consumers in Boston
City perspective	AV testing pilot	Expansion of AV testing
City policy-maker interviews	Launch of AV testing in Boston	Expanded testing area, three partners, active passenger trials
Mobility scenarios	AV impact study	AV impact study 2.0
Scenarios for urban mobility	Agent-based simulation of downtown traffic	Holistic city-wide traffic simulation with enriched trip data



We conducted a large-scale conjoint study in three cities



Representative sample size

Testing decision in real situations

We first asked respondents to think about a specific trip along four dimensions...

Trip reason	Group context				
Weather	Time of day				
	* *				

...and then asked respondents to choose from one of 8 mobility options, listing individual price, time and vehicle layout

		Bus/ Subway	Commuter rail	Taszi (with shiwar)		Cor ³	Taxi (self-driving)		Minibus (self-driving)
	Price per ride	\$2	\$5	\$25	\$15	\$20	\$6.25	\$2	\$1
	Wattme	15 min	5 m/n	5 min	-	-	2 min	5 min	10 min
	Travel time (on given vehicle)	25 min	20 mm	15 mm	t5 min	15 mm	15 min	20 min	25 min
rites	Time on other transportation waking, but to bain, the	10 min	5 min	-	-	-	-	÷.	-
	Total time to destination	50 min	30 min	20 min	16 min	15 min	17 min	26 min	36 min
	Extra passengers (other customers charing vehicle)	50+	30+		-	-	e.	Up to 4	Up to 15
	Group capacity (largest group accommodated)	6+	6.	4	5	к	6	2	6.
	of the management	0	0	0	0	0	0	0	0



Boston's modal mix – urban vs. suburban



Mobility-on-demand = Taxi/ride hailing + autonomous taxi + autonomous shared taxi + autonomous minibus



Key outputs of the autonomous vehicle impact study

		Current	Future (Conjoint scenario)
	Number of vehicles on the road	1.75 million	-15%
	Vehicle distance travelled (km)	8.8 million	+16%
P	Parking spaces needed (km ²)	10.0	-48%
	Average travel time (minutes)	12.0	- <mark>4%</mark>









Effect of policy levers



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Ms. Debs Schrimmer

Lyft Senior Transportation Policy Manager

Debs Schrimmer is a Senior Transportation Policy Manager at Lyft, where she develops cutting-edge partnerships with public agencies around the country and help oversee Lyft's transportation policy initiatives around sustainability, infrastructure, public transportation, and the environment. Prior to Lyft, she worked as a digital policy strategist at Code for America and as a transportation planner at the Sacramento Area Council of Governments. Debs received her B.S. from the University of California, Davis in Community and Regional Development, is an honoree of the Women's Transportation Seminar.

Debs Schrimmer女士

Lyft 交通政策高级经理

Debs Schrimmer女士是美国来福车(Lyft)的一位交通政策高级经理,在来福车任职期间与全国各地的公共机构建立了尖端的伙伴关系,帮助监督来福车在可持续性发展、基础设施建设、公共交通和环境等领域的创新交通政策倡导。在美国来福车工作前,她曾在美国代码(Code for America)担任数字政策分析师以及在萨克拉门托地区政府委员会(SACOG)担任交通规划师。Debs在美国加州大学戴维斯分校获得了社区与区域发展的学士学位,同时也是妇女运输研讨会的获奖者。



The Future Of Transportation

Autonomous rides

Carbon neutral!



week in Denver!

artnering with 25+ 36,000 bikes Transit agencies nationwide

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Shawn Qin

Director of Global Government Affairs, Mobike

Master of public relations and communication, Clark University, USA.

Shawn is director of global government affairs, job includes the branding build to government, and cooperation with global organizations.

秦皓

国际政府事务总监, 摩拜

 美国Clark University 公共关系和传播学硕士,现任北京摩拜科技有限公司重大活动及国际对 外事务负责人,主要负责国际对外事务及政府端品牌形象。

Smart bike sharing Build smart city

Practitioner of low carbon emission reduction 中国城市骑行减排排行榜(单位:吨)



Mobike cycling globally reduces carbon emissions by **4.4 million tons** The overall economic benefit

Escceed 194 million US dollars

摩拜mobike

In 2020, more than 10 million Shared bikes will face obsolescence

Inactive Reported Manufacturing company operation bikes broken bikes collect repair Can be repaired judge Cannot be repaired Reuse lock, rim and PV panels **Recycle tires** dissemble Steel and aluminum parts electromagnetic vortex Sinking melt Shedding transport separation separation Non-metal materials plastic Other steel

Recyle plan of Mobike



Life cycle management vision

Lite 1.0 parts More compatible bike parts Sustainable supplier Reduce operation energy consumption Easy repair design design Purchase Durable bike manufacture REDUCE REUSE Closed supply chain for more parts • recycle Responsible recycle partners • RECYCLE maintain operate Special repair team Accurate provision of bikes

Total bike weight 17.79 kg





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Ms. Debs Schrimmer Senior Transportation Policy Manager Lyft



Mr. Shawn Qin Director of Global Government Affairs, Mobike

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