



基础设施项目的社会许可 (Social Licence for Infrastructure)

—概念、框架与治理逻辑

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Who is this guy?

- 清华大学管理科学与工程博士、工程管理学士
- 澳大利亚悉尼科技大学设计与社会学院副教授、博士生导师、管理项目硕士 (MPM) 学位主任
- 澳大利亚悉尼科技大学研究生院副教授，主管博士生导师培训项目
- 澳大利亚标准委员会及澳大利亚/新西兰联合标准委员会成员
- Project Management Journal 与 Built Environment Project and Asset Management 期刊编辑
- Engineering (工程管理学科) 青年编委
- 国际建筑研究理事会 (CIB) 政府与社会资本合作委员会 (W122) 联络负责人
- 主要研究方向：基础设施项目管理、政府与社会资本合作 (PPP)
- 发表期刊论文 110 余篇，总被引超过 8820 次，h-index 为 41
- 连续入选斯坦福大学全球前 2% 顶尖科学家“终身科学影响力”和“年度科学影响力”榜单



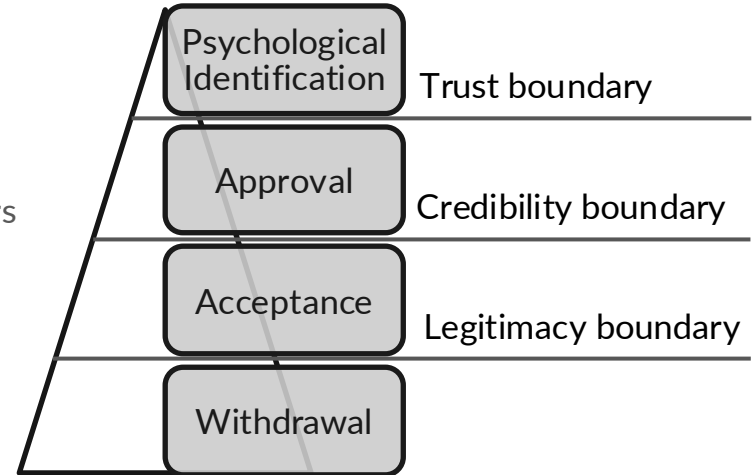
Why does societal approval matter more than ever?

- Community opposition increasingly delays or cancels infrastructure projects.
- Trust and transparency now matter as much as cost and time.
- Legal approval alone no longer ensures public acceptance.
- Projects are expected to earn and maintain a **social licence to operate**.

Traditional Success	Emerging Legitimacy Expectations
On time, on budget	Trust and transparency
Regulatory approval	Social licence to operate
Stable technical delivery	Responsive stakeholder engagement

What is social licence to operate (SLO)?

- A community's ongoing acceptance and approval of a project or organisation
- Not a formal permit, but a form of informal societal legitimacy
- Widely applied in mining, oil and gas, and forestry sectors
- Common SLO levels: Withdrawal → Acceptance → Approval → Psychological Identification



Has SLO been seen in the infrastructure sector?

1.2 Stewardship Principles

- (a) In the context of this document, "Stewardship Principles" are a broad set of values, attitudes and behaviours, required of the Service Provider to effectively manage the Assets on TfNSW's behalf.
- (b) The parties acknowledge and agree that the key "Stewardship Principles" applying include:
 - (i) putting TfNSW customers first and maintaining social licence to operate;
 - (ii) working collaboratively with TfNSW to deliver services that are tailored to the community's evolving needs;
 - (iii) performing the Services in the best interests of TfNSW;
 - (iv) being responsible and accountable for outcomes that reflect the values and diversity of the community;
 - (v) encouraging and enabling responses to changing technology, disruptive trends and behaviours; and
 - (vi) acting with integrity and transparency in the performance of the Services and all other obligations under this document.

3.4.9 Socio-economic

Issue description

Local heritage and tourism, as well as some existing local economic activities will be impacted. There is the case therefore, for the project to deliver other outcomes to offset through long term recovery or stimulus type actions. Without limiting the forms that this might take, Council's officers have suggested in meetings so far initiatives such as:

- Heritage - interpretation infrastructure, wayfinding and marketing
- Local tourism offers – a strategy and infrastructure to facilitate active tourism on a network of pedestrian and cycle paths/routes. The community, such as the HDPa, offer great initiatives in this respect. It is suggested that TfNSW work closely with Council and the community to identify the suite of options available for tourism and active transport offers, giving social licence to the project.
- Any other measures to cause motorists to pause in the valley and experience its offer

Response

The proposal has been prepared to improve the road safety and road network connections for the Little Hartley to Lithgow section of the Great Western Highway. This would directly lead to an improvement in accessibility of townships to tourists from Sydney and NSW Central West. As discussed in Safeguard AH04, several interpretation elements will be considered for design



Have we published anything on this topic?

- Chen, Y., Luo, X., Xu, M., Xia, B., Ke, Y., Skitmore, M., & Liu, Y. (2025). Conceptualizing the state of the art of social license to operate: A visualization-based word frequency analysis. *Environmental Science and Policy*, 171, 104163. <https://doi.org/10.1016/j.envsci.2025.104163>
- Jiang, T., Xu, Z., He, X., Xia, B., Ke, Y., Skitmore, M., & Liu, Y. (2025). Evaluating the resilience of social license to operate towards NIMBY facilities: A cloud model-based approach. *Environmental Impact Assessment Review*, 112, 107808. <https://doi.org/10.1016/j.eiar.2025.107808>
- Jiang, M., Luo, X., Xia, B., Ke, Y., Skitmore, M., & Liu, Y. (2025). Effects of emotional amplification on public perceptions of waste-to-energy incineration facilities: Evidence from a behavioral survey experiment. *Energy Efficiency*, 18, Article 70. <https://doi.org/10.1007/s12053-025-10358-6>
- Zhou, Q., Luo, X., Gao, X., Xia, B., Ke, Y., Skitmore, M., & Liu, Y. (2024). Impact of psychological distance on public acceptance of waste-to-energy combustion projects. *Environmental Impact Assessment Review*, 109, 107631. <https://doi.org/10.1016/j.eiar.2024.107631>
- Jin, K., Yu, S., Xia, B., Ke, Y., Skitmore, M., & Liu, Y. (2024). Exploring the effect of procedural fairness on the social license to operate of resource development projects: A meta-analysis. *Resources Policy*, 96, 105242. <https://doi.org/10.1016/j.resourpol.2024.105242>
- He, X., Xu, M., Cui, C., Xia, B., Ke, Y., Skitmore, M., & Liu, Y. (2023). Evaluating the social license to operate of waste-to-energy incineration projects: A case study from the Yangtze River Delta of China. *Journal of Cleaner Production*, 388, 135966. <https://doi.org/10.1016/j.jclepro.2023.135966>
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- Bao, W., Chen, Y., Cui, C., Xia, B., Ke, Y., Skitmore, M., & Liu, Y. (2023). How to shape local public acceptance of Not-In-My-Backyard infrastructures? A social cognitive theory perspective. *Sustainability*, 15(22), 15835. <https://doi.org/10.3390/su152215835>
- Zhou, Q., Xu, M., Liu, Y., Cui, C., Xia, B., Ke, Y., & Skitmore, M. (2022). Exploring the effects of spatial distance on public perception of waste-to-energy incineration projects. *Waste Management*, 143, 168–176. <https://doi.org/10.1016/j.wasman.2022.02.033>
- Ge, Y., Cui, C., Zhang, C., Ke, Y., & Liu, Y. (2021). Testing a social-psychological model of public acceptance towards highway infrastructure projects: A case study from China. *Engineering, Construction and Architectural Management*, 28(9), 2772–2787. <https://doi.org/10.1108/ECAM-03-2020-0183>



Why don't existing SLO concepts fit infrastructure?

- SLO originated in mining and resource sectors with single, long-term operators.
- Infrastructure involves multiple phases with shifting lead entities.
- Legitimacy in infrastructure is linked to the project, not a single organisation.
- Public stakeholders are more diverse: users, non-users, taxpayers, communities.

SLO in Extractives	Infrastructure Projects
Company-centric, stable operators	Project-centric, changing lead actors
One-site, one-community relationship	Multi-stakeholder, multi-phase context
Focus on continuous operations	Focus on legitimacy across the lifecycle



What is the structure and value of the SLI framework?

- A sector-specific framework tailored to the lifecycle and governance of infrastructure delivery.
- Structured across two dimensions:
 - **Normative** : What the SLI is – Ownership, Grantors, Status
 - **Operational**: What projects must do – Gaining, Maintaining, Repairing
- Adaptable to context through **external modifiers** (e.g. project type, scale, governance).
- Designed to manage legitimacy dynamically over time and through disruption.



How does each element clarify the concept of SLI?

- **Ownership** – SLI is granted to the project, not a single entity; shared across delivery partners.
- **Grantors** – A diverse, fragmented network including users, communities, councils, taxpayers.
- **Status** – A continuum: Withdrawal → Acceptance → Approval → Psychological Identification.
- **Gaining** – Building legitimacy early through engagement and alignment.
- **Maintaining** – Sustaining trust via transparency, responsiveness, and ethical conduct.
- **Repairing** – Restoring legitimacy after disruption or loss of support.



How can the status of the SLI be measured?

- Traditional SLO measurement uses standardised survey instruments and interviews
- Most widely accepted tool: Boutilier's SLO questionnaire
- These methods are resource-intensive, time-delayed, and difficult to scale
- This study proposes: **a sentiment-based measurement approach**
- Real-time, cost-effective, and scalable
- Captures evolving public attitudes using digital data

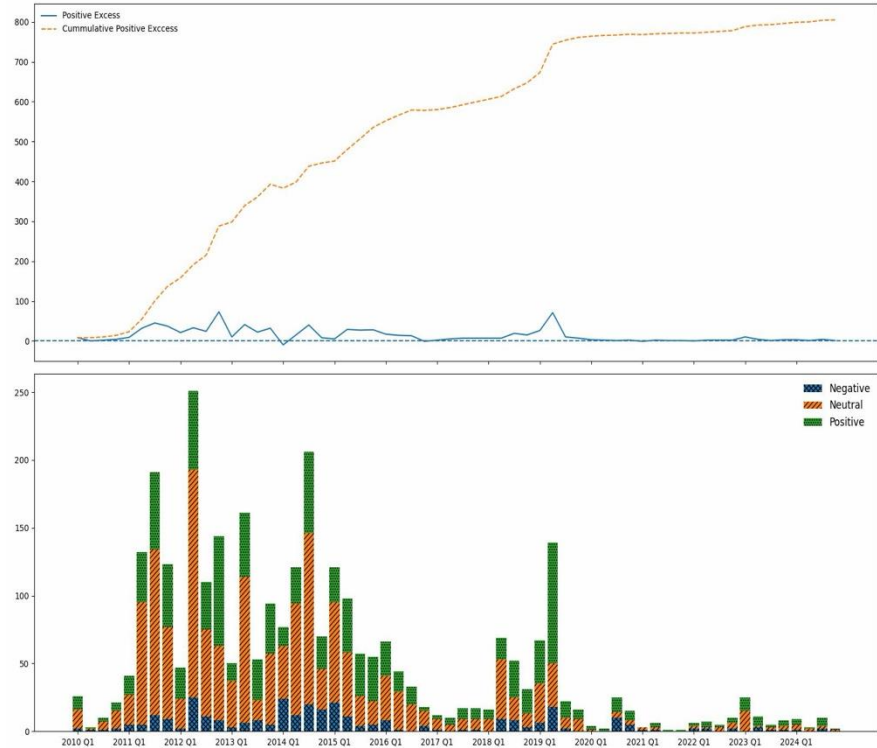


How is the approach demonstrated?

- Case: **Sydney Metro Northwest (SMN)**
- Data source: **Social media posts from Platform X (formerly Twitter)**
- Timeframe: **May 2008 – December 2024**
- 3,057 posts retrieved using project-specific keywords
- Sentiment categories: **Positive, Neutral, Negative**
- Analysis conducted using **ChatGPT-4o**

What insights and applications emerge?

- Public sentiment remained largely positive
- Peaks in online discussion
- Sentiment trends over time
- Granular analysis (e.g. Q2 2019)
- Supports SLI maintenance and repair by identifying emerging issues and guiding adaptive stakeholder engagement





What challenges remain and what comes next?

- **Linking Sentiment to SLI Levels**

Sentiment analysis adds a complementary layer to surveys/interviews. Cross-validation can be developed when both data types are available.

- **Validating and Improving the Framework**

Sector-specific SLI requires further case studies across diverse infrastructure projects.

- **Role of AI**

Explore how AI can support multi-source data processing, trend detection, and stakeholder insight—while ensuring reliability.



What are the key takeaways from this study?

- Infrastructure projects require sector-specific approaches to societal approval
- The SLI framework defines six core elements across descriptive and action dimensions
- Sentiment analysis offers a dynamic way to track public perceptions
- The combined framework and method help manage legitimacy throughout the project lifecycle



What's next: social procurement

- If social licence asks whether communities accept a project, social procurement asks whether the project delivers value back to them.
- Definition: using infrastructure spending to generate social value beyond the asset, directing procurement toward employment, supplier diversity, and community benefit.
- Why it matters: governments increasingly attach social value requirements to major contracts, shifting from lowest cost to broader public value.
- Examples: local and Indigenous employment targets; set-asides for social enterprises; community benefit agreements on transport and energy projects.
- Open questions: How is social value defined, measured, and verified? How does it interact with social licence and contracting behaviour?