



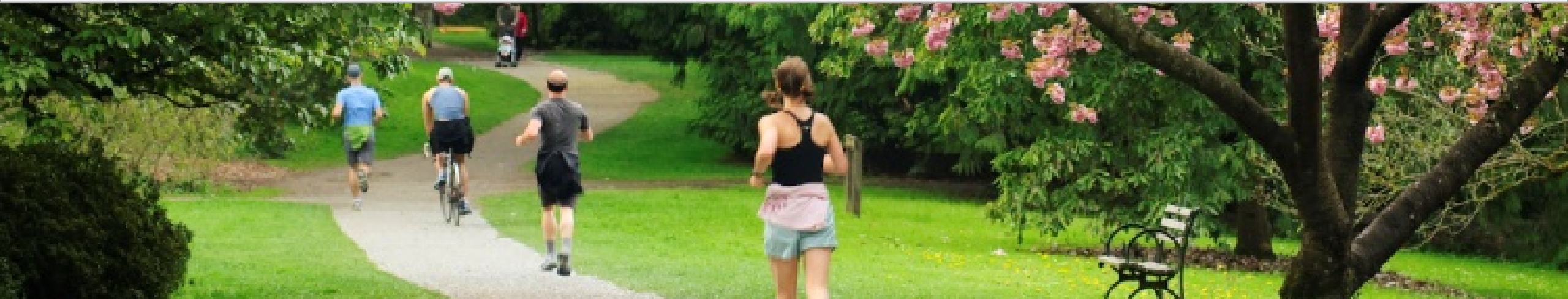
Integrating Mitigation, Carbon Sequestration and Ecosystem Services at Community- relevant Scales

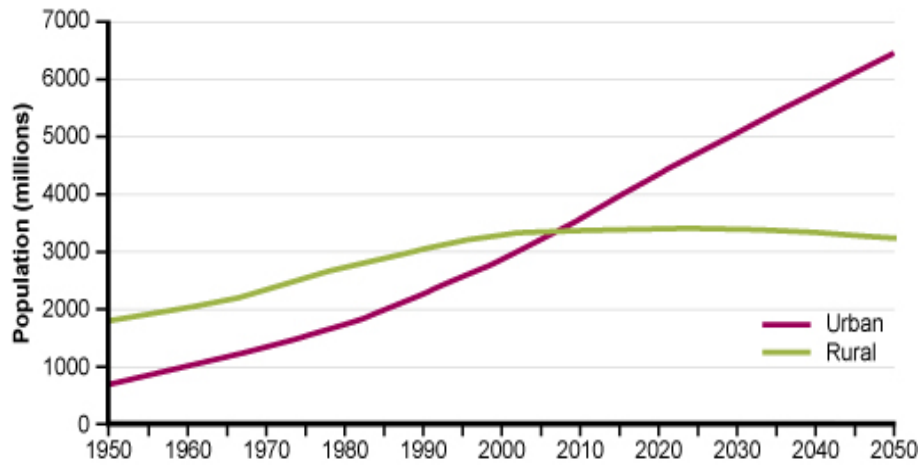
LSA

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2050: 67% of world population is urban

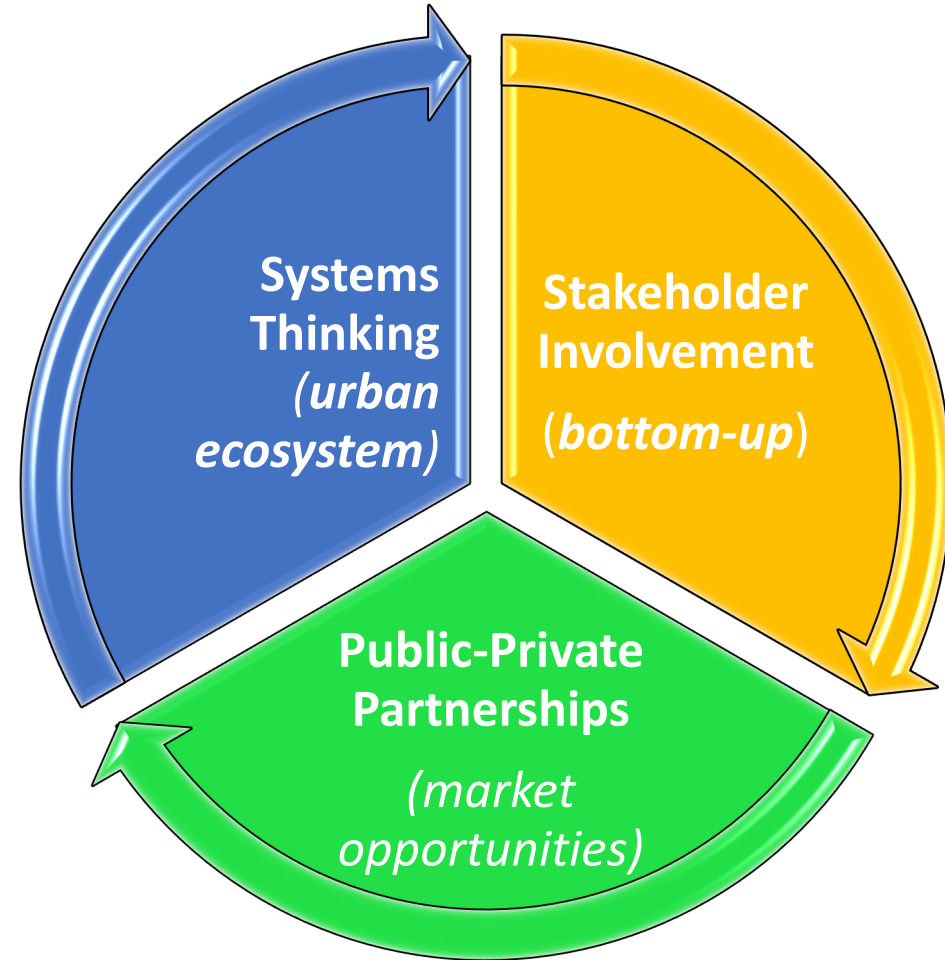
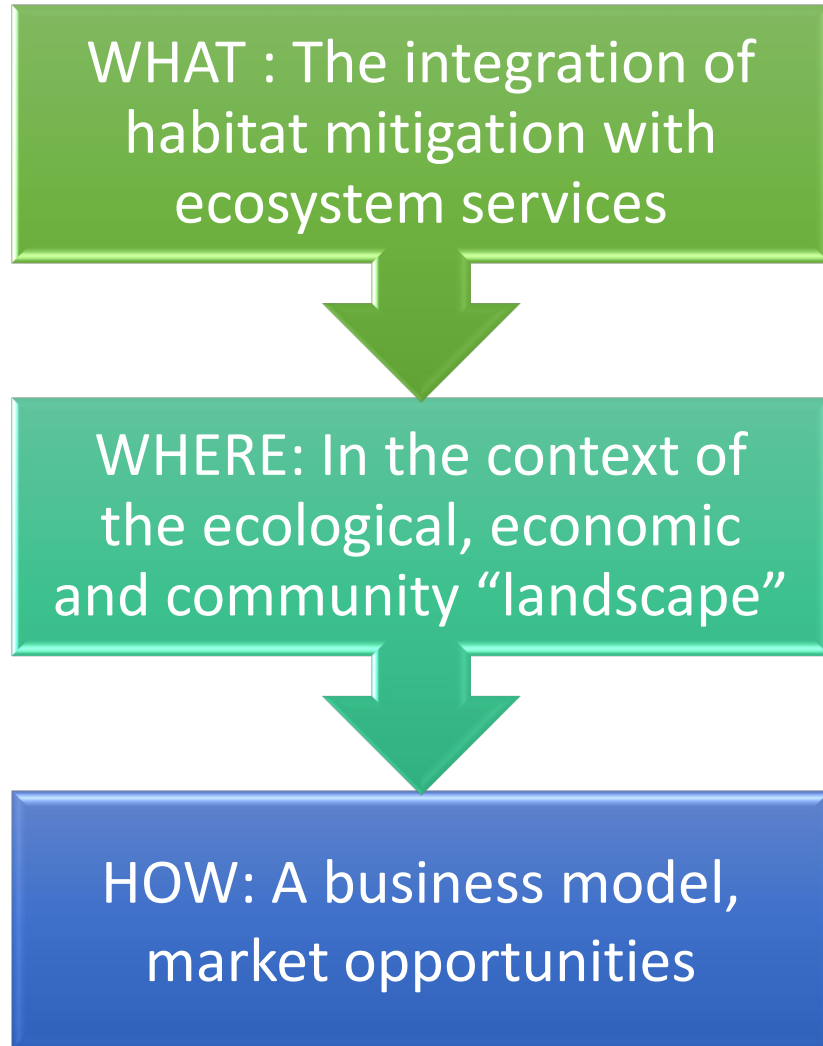
Urban Transportation projects

- Small, linear footprint
- Disadvantaged Communities disproportionately affected
- Few endangered species, many common species

-> Regional Advance Mitigation



Framework



Criteria:

1. Establish ecosystem service targets that can be quantified and monetized
2. Recognize multiple ecosystem services and their role in climate change adaptation
3. Provide a comprehensive ecosystem context for urban mitigation
4. Appropriate scale of assessing and mitigating impacts
5. Maintains the ability for off-site mitigation
6. Encourages participation of stakeholders in local decision-making
7. Respects the neighborhood-specific cultural/socioeconomic context
8. Recognizes market opportunities beyond traditional mitigation/conservation banking
9. Builds partnerships between municipal, State, and private groups



Assembly Bill 32 - California Global Warming Solutions Act of 2006

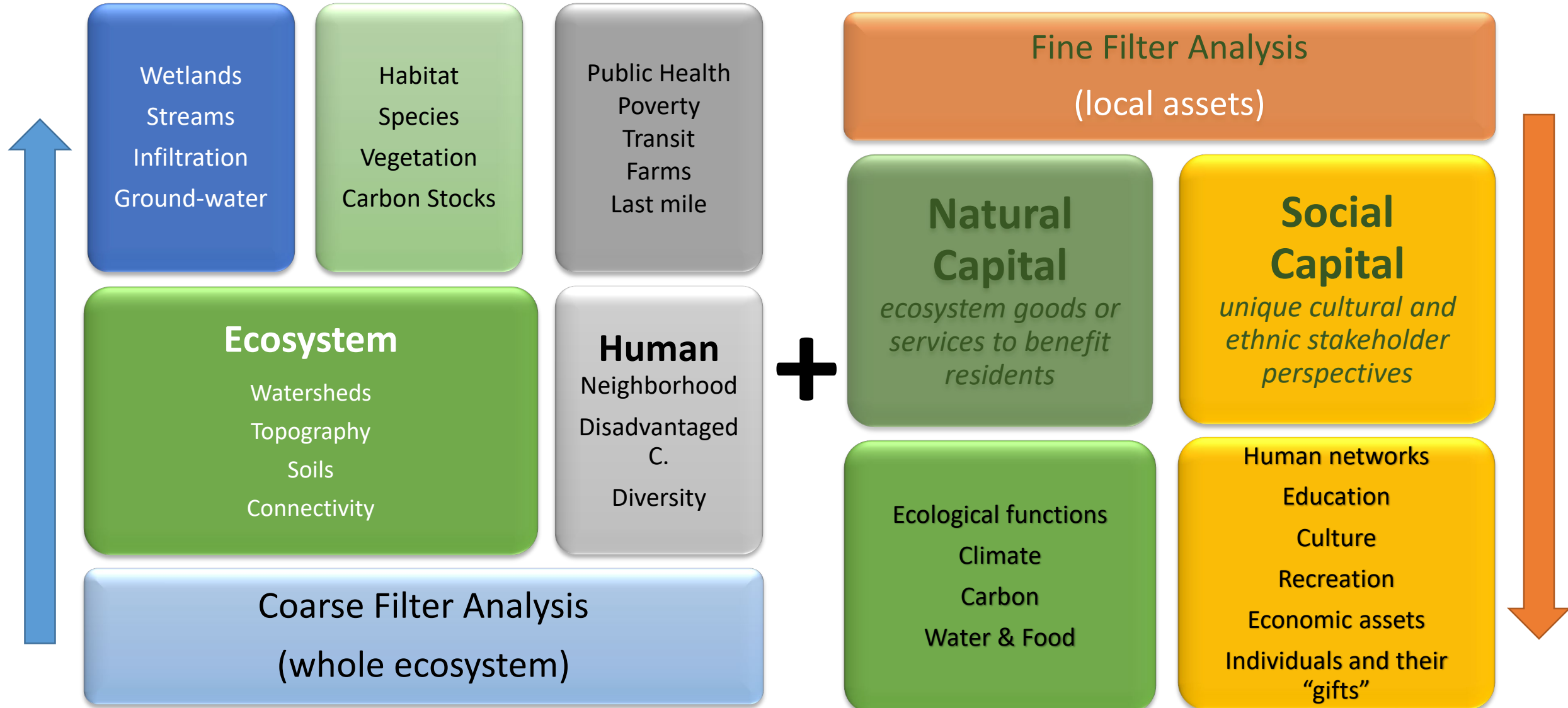
- Cap-and-Trade program
- Funds must further reduce emissions of greenhouse gases

Senate Bill 535 of 2012 - Disadvantaged Communities:

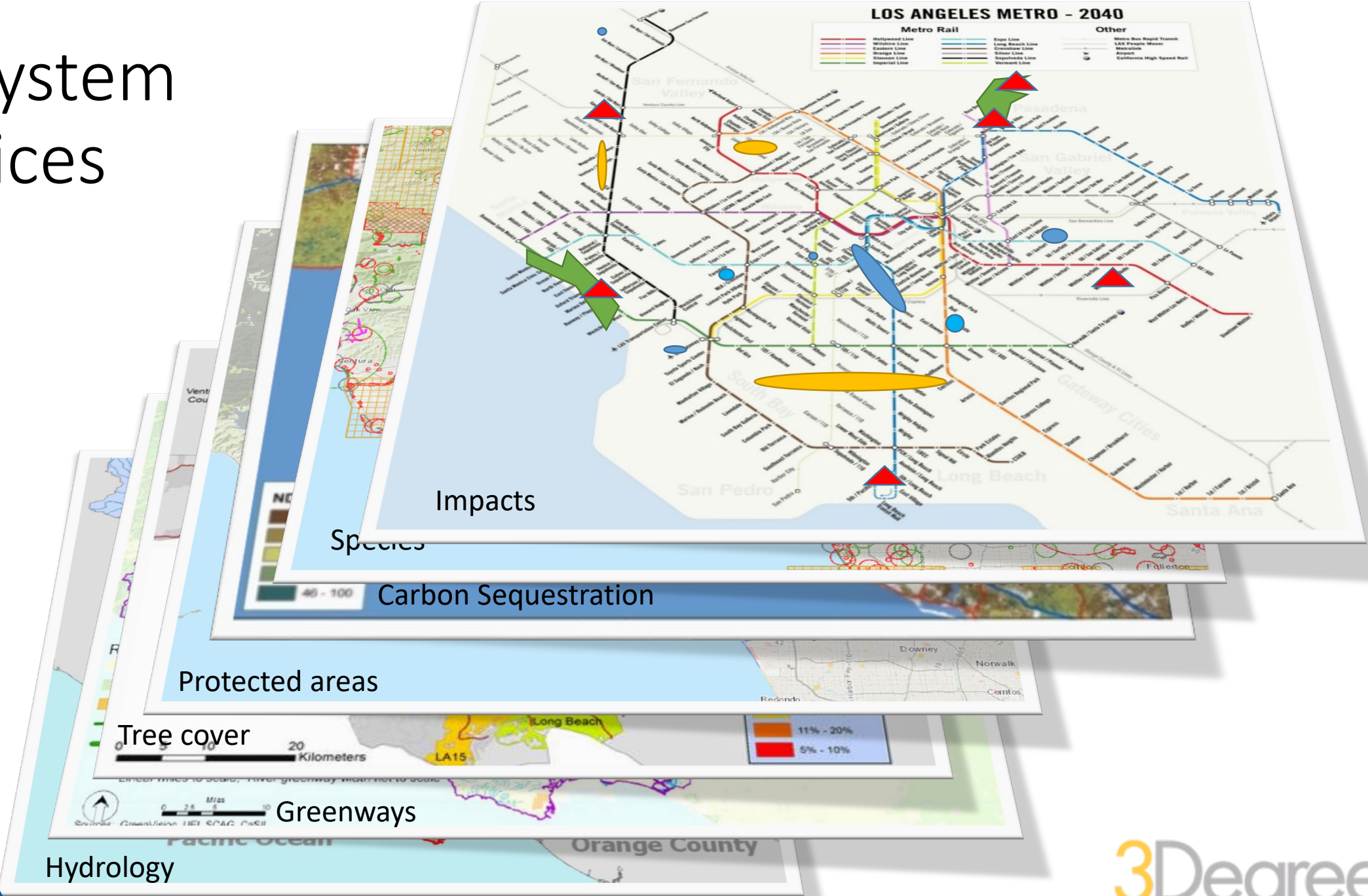
25 % of the Cap-and-Trade funds must be invested in:

- Disadvantaged communities
- Public health, quality of life and economic opportunity





Ecosystem Services



Community “Landscapes”



Prioritization and Constraints

Prioritization of neighborhoods

- ranking system based on socioeconomic and disadvantaged community status.
- poorest communities receive a priority in addressing environmental impact mitigation.

Constraints Analysis

- Physical constraints
- Regulatory constraints
- Fiscal constraints
- Local issues, concerns, and cultural value considerations



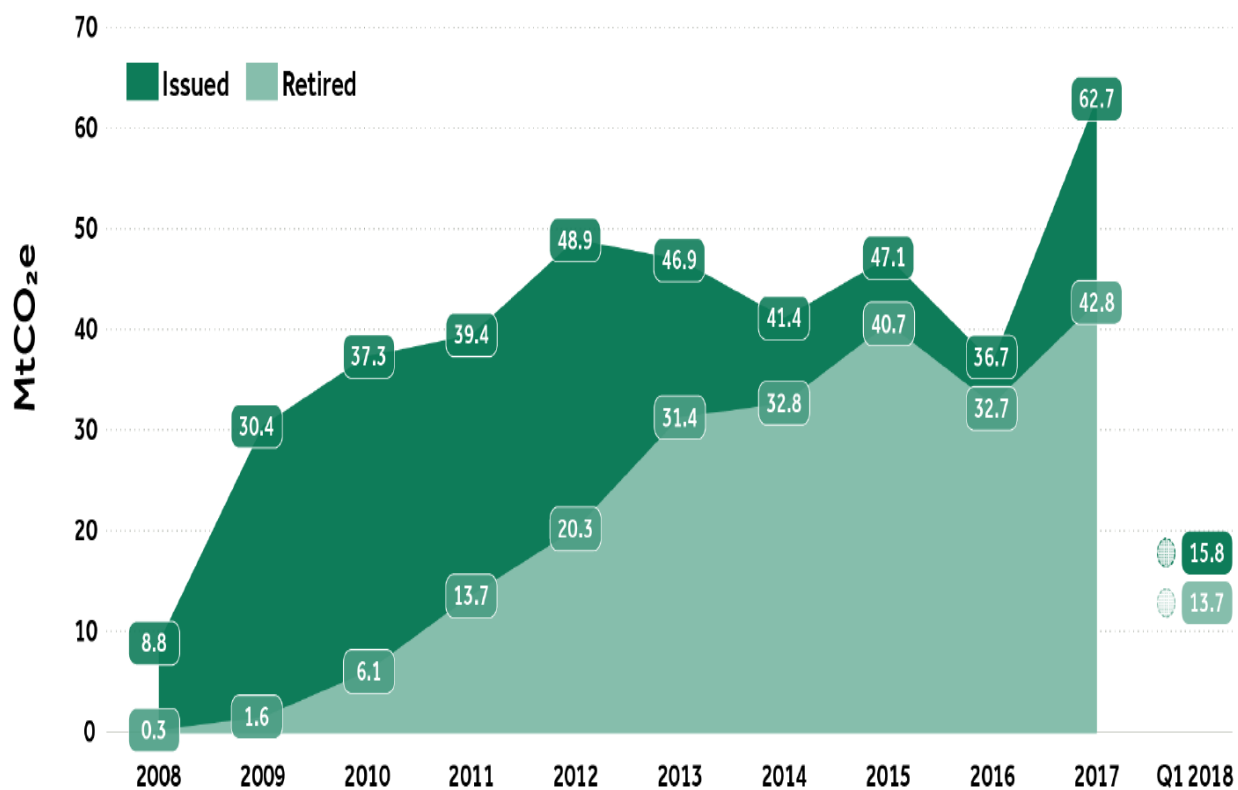
“Community Ecosystem Service Banks”

- Habitat / OpenSpace / Carbon sequestration at the Neighborhood scale
- Debits and credits are addressed by the community in its own cultural context
- Credits belong to local communities
- Pride of Ownership, Sense of Belonging, Motivation, Health
- Intergenerational learning, applied science curriculum, local food, arts



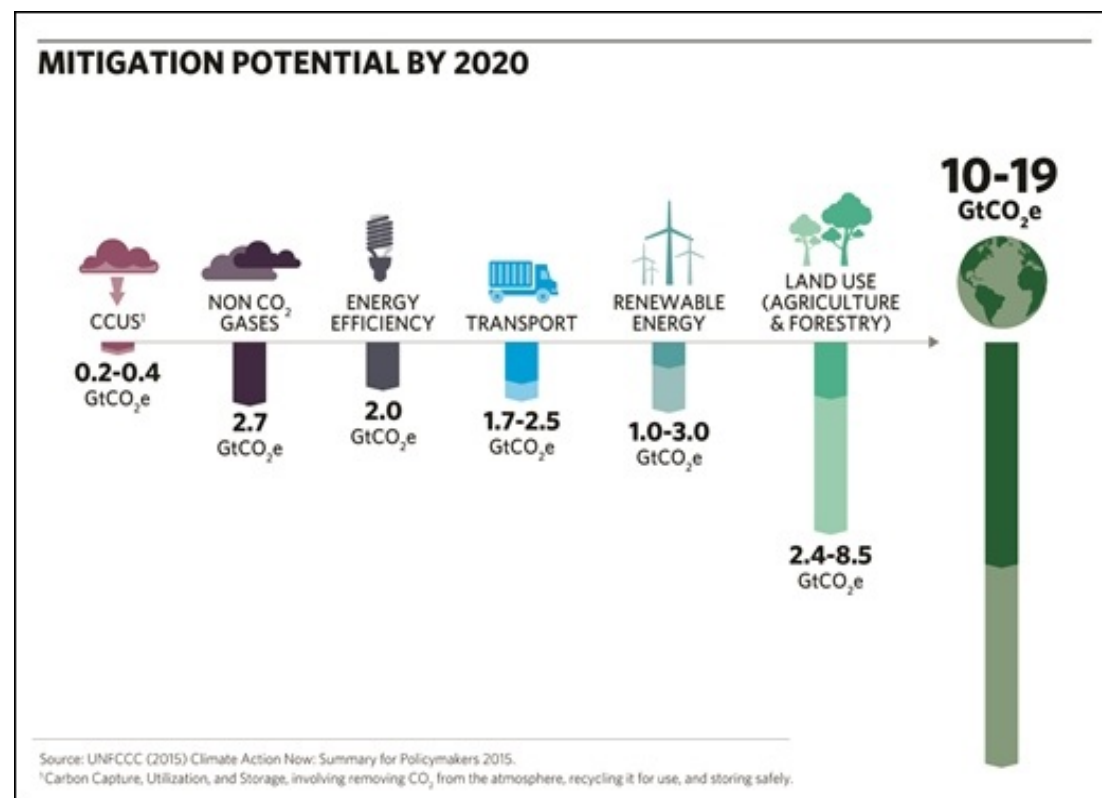
Financing: Voluntary Carbon Offsets

Voluntary Carbon Offset Supply & Demand, 2008-17



Source: Ecosystems Marketplace, April 2018

Prices Range from \$.50/tCO₂e to \$50.0/tCO₂e
(average=\$3/tCO₂e)



Business Model: Many Interested Stakeholders with Complementary Program Funds

States & Cities (CA 2018 : \$8B)

- GHG emission reduction programs and Climate adaptation grants (Forest health, Soil Health, Urban Forestry)
- **Water Bonds** (\$13 B in 2018)
- **Transportation Plans** (Measure M)

Corporations and non-profits

- **Healthcare** organizations
- Job creation, **community engagement**

Voluntary corporate actors

- Carbon credits
- Water credits (emerging)

• Utilities/Energy

- Urban forestry
- Agricultural offsets under Windfarms

• Mitigation or compensatory payments

- Regulatory Mitigation of new development impacts (species, habitat)
- Santa Barbara County – Air quality mitigation for oil exploration GHG – agricultural carbon sequestration

→ **Most of these funding sources are complementary (no direct overlap) and can be used simultaneously to fund the same project activity**

- Provides funding of \$30-40M/year in U.S. alone
- Primarily large U.S. companies seeking to neutralize GHG emissions relevant to their activity
- Strong interest in local GHG reduction projects with strong “co-benefits”
- BUT carbon offsets only convey GHG benefits (other benefits remain available)
- Very few urban-sited offset projects but strong demand for them



Greenhouse gas emissions aspiration: Become climate-neutral in our operations by 2020.



“Google has been carbon neutral for more than a decade, and in that time, we’ve partnered with more than 40 carbon offset projects to offset more than 17 million tCO₂e”

CARBON OFFSET PARTNERS



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