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APPLICATION FOR POSTER SESSION: ABSTRACT

Degrowth-Transition of Water Consumption in California

The Problem of Demand Methods, Uncertainty, Values and Climate Change

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An increasing amount of research recognizes that a degrowth transition, including the reduction of water consumption, is part of a solution to adapt to drought conditions, uncertainty, water scarcity, population growth and climate change (Hanak 2010; Gleick 2003; Kallis 2009). This body of research focuses on three different methods towards reducing water consumption and identifies the political discourse surrounding their advantages, values and beliefs (Dryzek 2005). Based upon the principles of the Viennese Socialization Debate (Uebel 2008; O'Neill 2003) and Ecological Economics (Spash 2012) this research analyzed and criticized the three methods and pursued the question of what is the most effective and democratic method to degrow sustainably water consumption in California.

Californian Water History

Over decades, modern Californian society has been shown to be able to cope with natural threats to water availability and reliability. Aqueducts, dams, groundwater access and desalination financed by public subsidies have created resistance to biophysical limits (Reisner 1993). However, multiple threats, such as frequent droughts, water quality problems, political disputes over water sources, environmental protection of existent water sources, groundwater depletion, saltwater intrusion, and climate change have become increasingly important matters in modern society (Lauer 2009). Consequently, water politics has been changed considerably (Kallis 2008). Traditional water supply politics in California had embraced the idea of allocating and distributing as much water as possible (Chesnutt 1997). However, biophysical-limits required the degrowth of water consumption by implementing demand policies.

Californian Water Policies

In reformist water districts in California, the demand for water has either been regulated in forms of marginal-value pricing or in budget tiered rate structures. Enforced government rationing has been used only in emergencies. Marginal-value pricing implies increasing prices for the additional unit of water (Chesnutt 1997). Budget tiered rate structures imply a deep progressive rise in prices for each – customer specific - block of water consumed (Mayer 2009). Theoretically, marginal-value pricing can be categorized as a Neoclassic market-based model of managing water demand (Hanemann 2005). Budget tiered rate structures are a combination of government and market policy and – following this research - be categorized as an Ecological Economics model. Furthermore, marginal-value pricing has been shown to be more supportive for businesses and industries because of their different and relatively high need for water. Budget tiered rate structures have been shown to be more supportive in reducing water demand in suburban areas and being able to

achieve high revenues (Mayer 2009). Despite their significant differences, marginal-value and budget tiered rate structures have shown that in times of extreme shortages, central-government rationing must be introduced to reduce water consumption most effectively.

Theoretical Foundation

The political discourse over regulation of resources involves values, interests and beliefs. Market methods have been strongly advocated in modern neo-liberal politics, but the debate over whether the market can outperform central-government policies goes back to the 1920s (Mises 1920; Uebel 2008; O'Neill 2002). At that time the Viennese Socialization Debate (ibid) took place. Lessons from this debate include the need to address criticisms of information-deficiency and authoritarian problem of central-government policies (Mises 1920; Uebel 2008) and the discount-problem of future-societies and disconnection between human well-being and rational-markets (Uebel 2008; O'Neill 2002). Apart from the lessons of the debate, policy conclusions must include Ecological Economics principles of strong uncertainty, precaution, social justice, biophysical limits, degrowth and decentralized democracy (Spash 2012). Thus, policy conclusions do not support exclusively market or central-government approaches; however, they support government-market policies based on degrowth, precaution, democracy and justice principles.

Research Conclusion

Budget Tiered rate structure does not only create more effective incentives to reduce water demand but also fulfills the principles of the Socialization Debate and of Ecological Economics. Budget tiered rate structure combines the advantages of governmental and market policies. Furthermore, it combines values of degrowth, democracy, social justice and intergenerational justice. Neither exclusively market nor central-government policies do maintain these principles. However, budget tiered rate structure does imply problems relating to information-deficiency, ruling market-ideology and educational requirement for the general public.

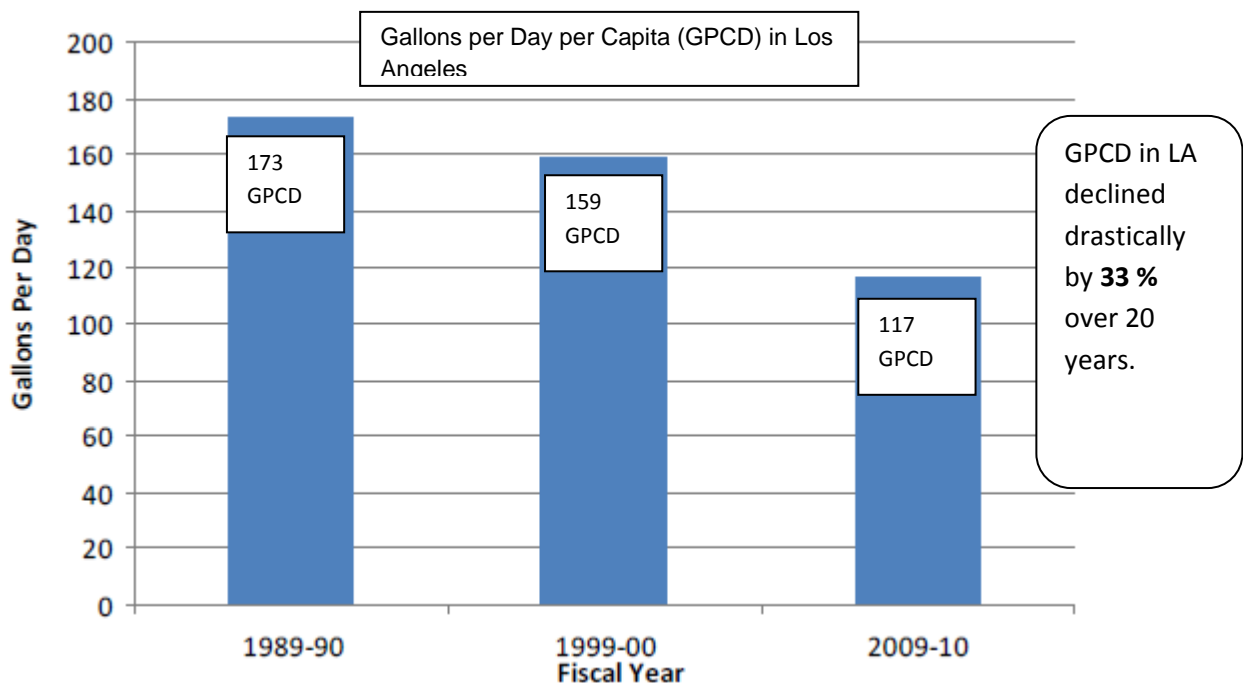
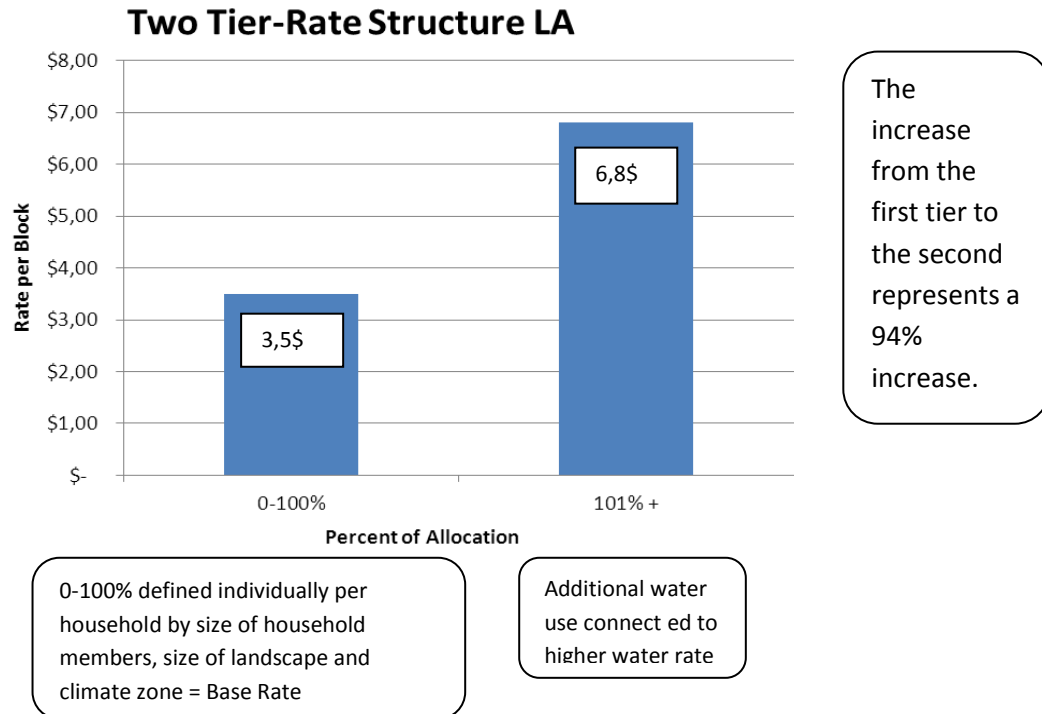
The final question of this research asks whether a combination of government and market regulation based upon Ecological Economics principals achieves a sustainable degrowth transition.

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Appendix: Suggestions for the Poster:

1. Marginal Value Pricing: Inclining Block Structure



Gallons per Day per Capita in Los Angeles. Source: City of Los Angeles (2011): Draft 2010 Urban water Management Plan. p24.

<http://www.ladwpneighborhoodnews.com/external/content/document/1643/992207/1/Draft%20Urban%20Water%20Management%20Plan.pdf> [Access 16.04.2012]

2. Government Rationing

Table 3 Programs Adopted by Retail Water Suppliers during California Drought 1976-77

Supplier	Residential Rationing Program	Achievement Percent
Marin Municipal Water District	Mandatory 57 percent per capita	65
East Bay Municipal Utility District	Mandatory 35 percent per household	40
Contra Costa County Water District	Mandatory 30 percent	25
San Francisco Water Department	Mandatory 25 percent	30
Los Angeles DWP	Mandatory 10 percent	16
Sunnyvale Water Department	Voluntary 25 percent	26
Santa Clara Valley Water District	Voluntary 25 percent	30
City of Pleasanton	No program	19

Source: State Of California (2007): Urban Drought Guidebook. 2008 updated edition. P.57

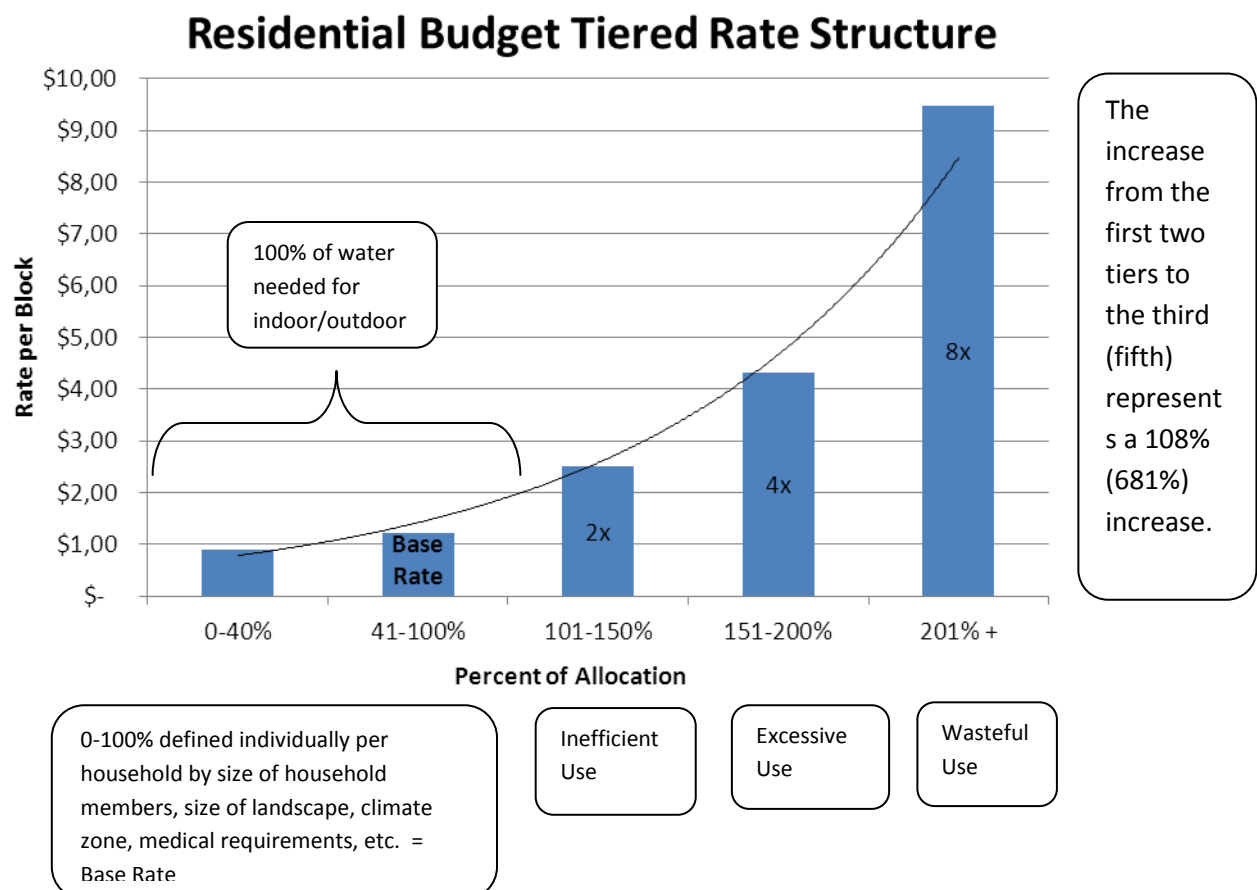
http://www.water.ca.gov/pubs/planning/urban_drought_guidebook/urban_drought_guidebook_2008.pdf [Access 16.04.2012]

Rationing Includes:

- Centrally imposing specific percent reduction in water consumption for the whole population
- Restricting outdoor water use for lawns and swimming pools, etc. (only certain days, certain hours, etc.)
- Prohibiting water use for washing paved surfaces and cars
- Prohibiting water use for decorative reasons, such as fountains, etc.

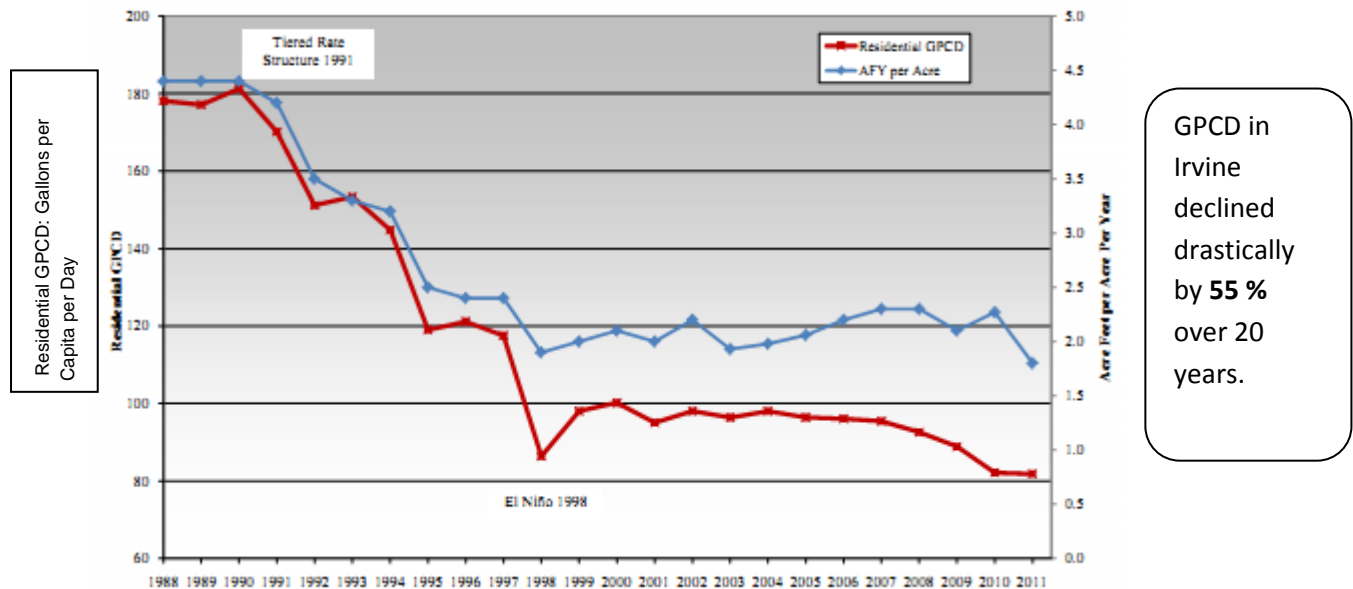
3. Budget Budgeted Tiered Rate Structure

3.1. Residential Budgeted Tiered Rate Structure.



Source: Sanchez, Fiona (2012): Sweetwater presentation. P. 24

3.2. Budget tiered rate structure result for residential and landscape water usage: 1988-2011.



Source: Sanchez, Fiona (2012): Sweetwater presentation. P. 27

4. Comparing the three methods:

Meth ods	Pricing Method	Budget Tiered Rate Structure	Central- Government Rationing
Princ iples	1) Allocative efficiency = Marginal cost of water increases, water consumption of low value decreases 2) Price Elasticity : Outdoor Water 3) <i>Precondition</i> : Slightly decreasing water availability	1) Basic needs must be met 2) Luxurious use must be heavily priced and reduced 3) <i>Precondition</i> : Strong-decreasing water availability (long-term)	1) Central decisions to reduce water consumption 2) Price Inelasticity : Indoor Water 3) <i>Precondition</i> : Not enough water available (short-term)

Values	1) Market Values: Water is a Commodity 2) Value of scarcity is expressed in money 3) Pursuing individual freedom	1) Precautionary Values: Water is scarce and must not be wasted 2) Value of Scarcity is expressed in precautionary policies 3) Pursuing social justice	1) Emergency Values: Water must be rationed 2) Value of scarcity is expressed in regulations and prohibitions 3) Pursuing survivalism
Benefits	1) Efficient allocation of water for highest use 2) Social Costs/ Externalities higher priced 3) Easily implementable 4) Industry and Business friendly	1) Social justice : basic water needs distributed at low price 2) Excessive water use priced progressively 3) Social-costs/ externalities excessively priced 4) Adjustable to droughts 5) Stabilized revenues despite lower consumption	1) Short-term effectiveness in reducing water consumption 2) Rationing affect everybody 3) High incentive of preserving water = enforcement
Problems	1) Low incentive to preserve water 2) Low Options during droughts: only governmental regulations 3) Lower consumption equals lower revenues 4) Problem of Equity and intergenerational discount	1) Data intensive : customer specific information 2) Established for households , difficult for Industries, etc. 3) Public education 4) Required change of established values , such as water as a commodity or government as last saver	1) Unfair : High efficient users equally faced by rationing 2) Inefficient : Users/Businesses with higher demand equally faced by rationing 3) Rebound effect after the drought 4) State as last savior: authoritarian misuse