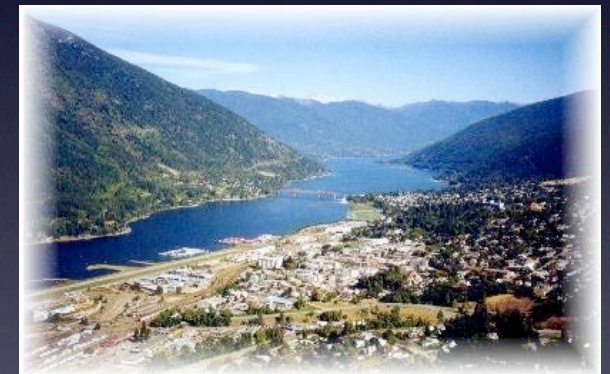


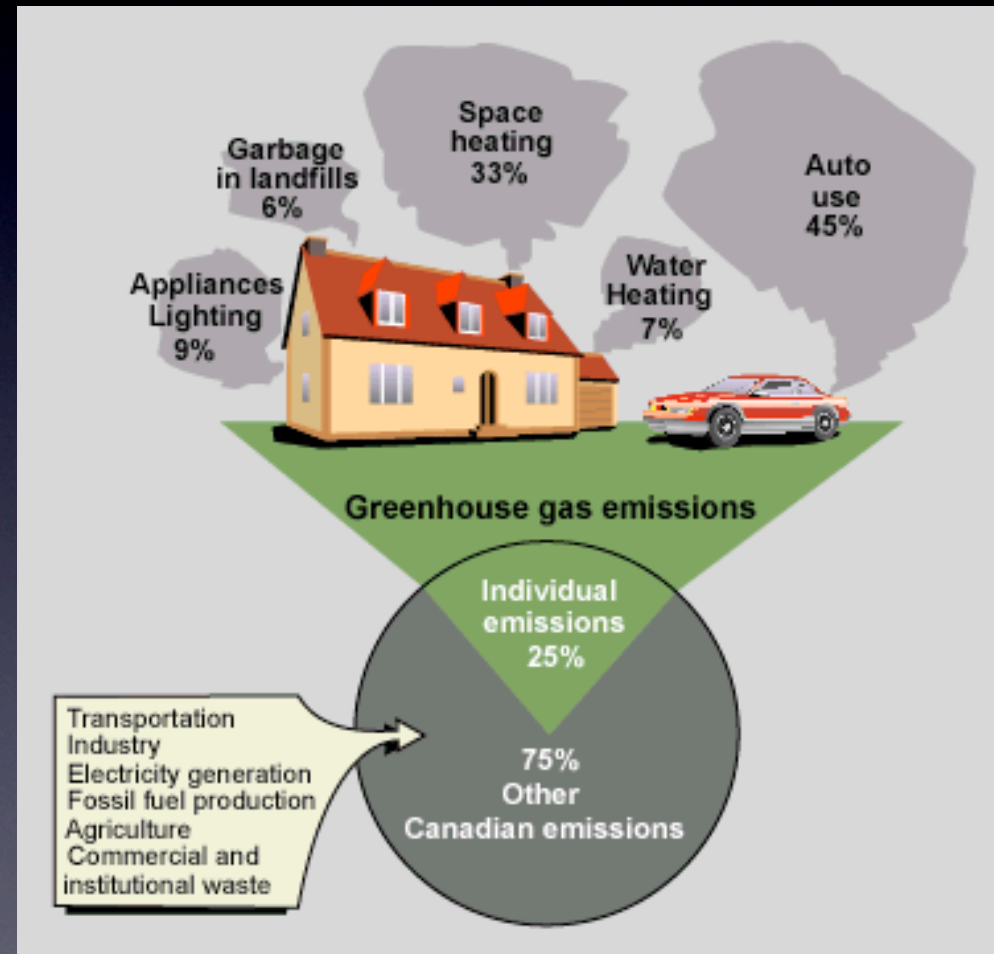
# NELSON BC SSP3 2007



A Cross-cultural, cross spectrum  
look at Global Scale impacts on  
us & then of us on each other.



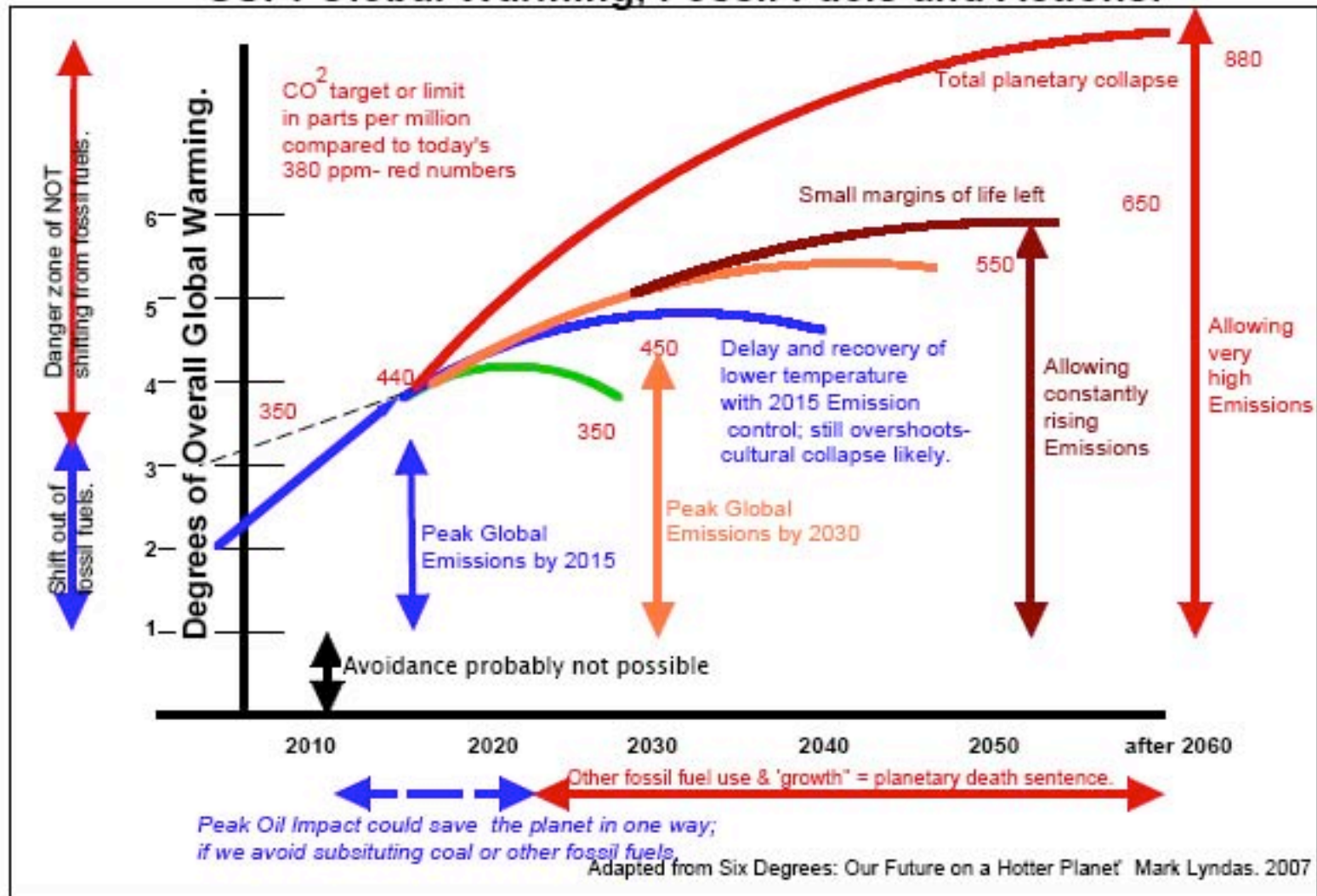
# 100 years of Cheap Energy, - now what?





# Fossil Fuels & Heat

## SSP: Global Warming, Fossil Fuels and Actions.



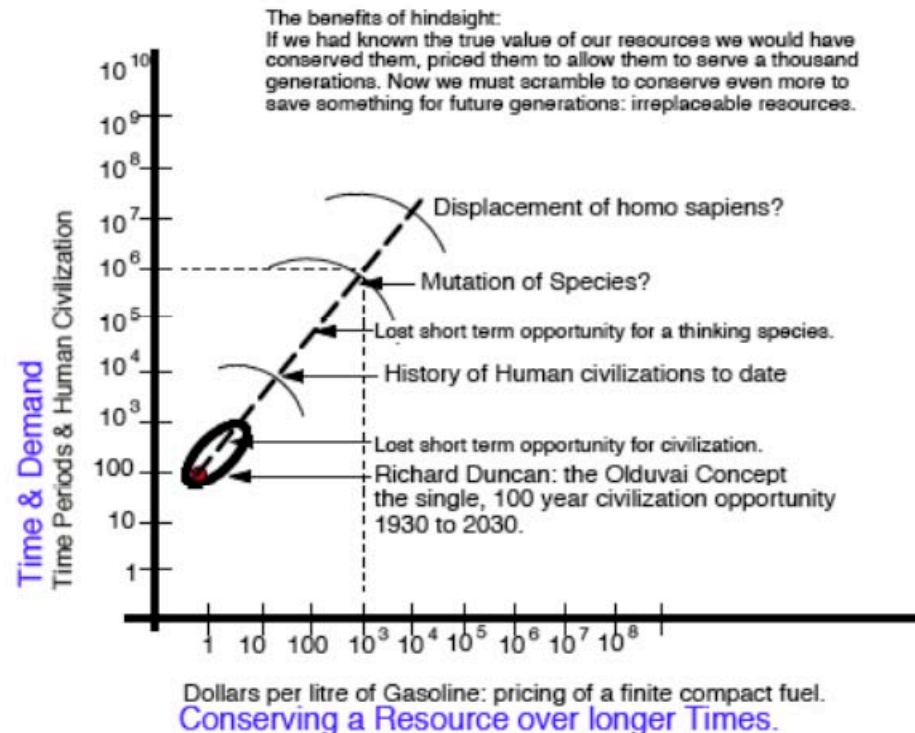
# Real Sustainability





## SSP: The Manual

The Olduvai Civilization and the end of cheap energy.  
Of why gasoline should have been taxed at a "thousand dollars a litre".



Interpretation:  
Current market of 100 years, short term thinking, loss of opportunity  
A thinking civilization would have planned & charged on a 10 to 100 year pricing  
A planning for survival species would have charged on a thousand to a million year demand horizon  
Richard Duncan, the Olduvai theory; we blew it all in a century with nothing left of significance.  
Issue, can we recover fast enough to at least conserve what is left?  
For those that bank on Technology Rescues, that is extremely dangerous gamble.  
All alternate technologies require oil to make the machinery to make them work.

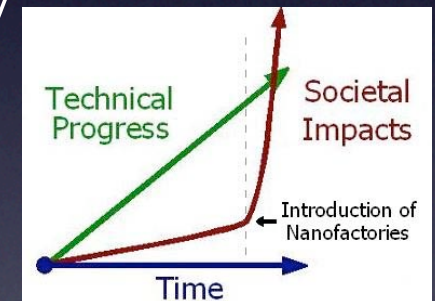
Balfour & Keenan 2007

# Our Blunder -- A Lost Opportunity



# ORDER OF MAGNITUDE CHANGE scenarios

- DECIMATION OR -90% ( $10^{-1}$ ) TO
- EXPLOSIVE GROWTH 1000% ( $10^{+2}$ )



Beyond Linear Trends, Global tipping point Impacts.



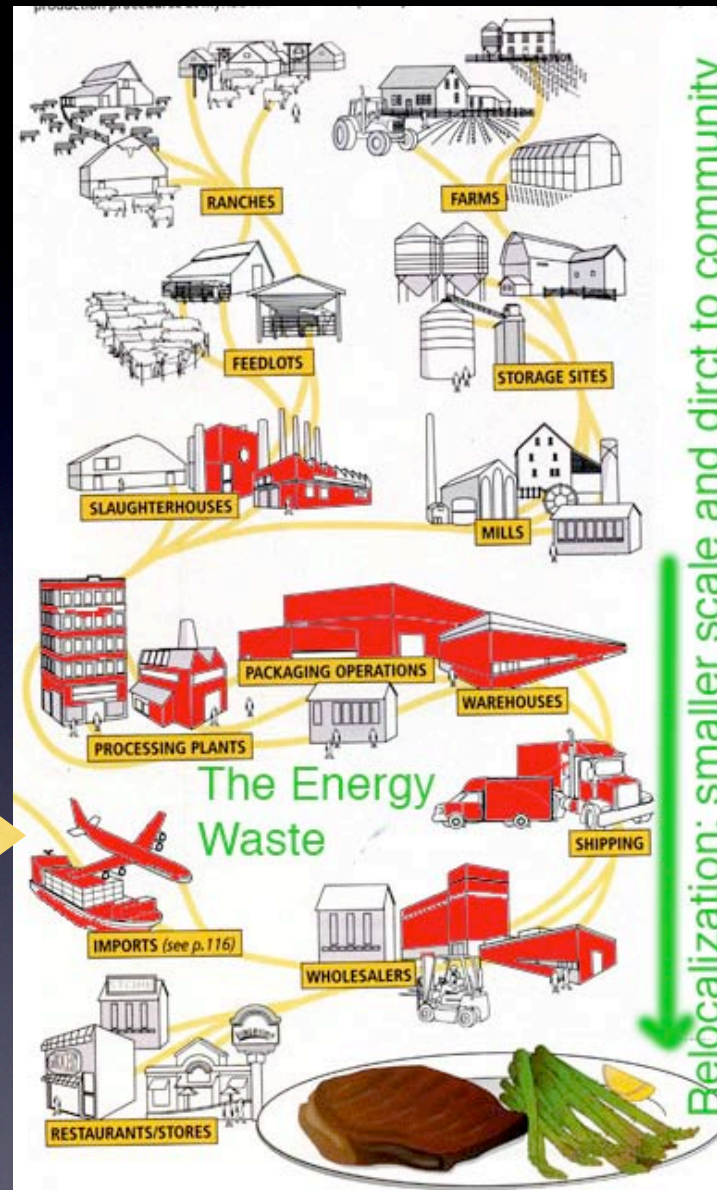


# Future Trend Line #3

- Trend 1. Life unchanged: nice but unlikely. (But what current planning projects all futures on.)
- Trend 2. At minimum, Peak Oil impact will compact towns, empty suburban sprawl areas & force more local production of food & a move to alternate energy capture: coal, wood, solar, wind, geothermal, & more importantly, human power.
- Trend 3. But these same impacts elsewhere unavoidably will trigger mass migrations which smaller centers in desirable places cannot escape. The order of magnitude impact on smaller centres will be greater than on large cities, as most cities will suffer decline, not growth. -They already exceed the local carrying capacity of the earth and they cannot be serviced by a long supply line without cheap oil.



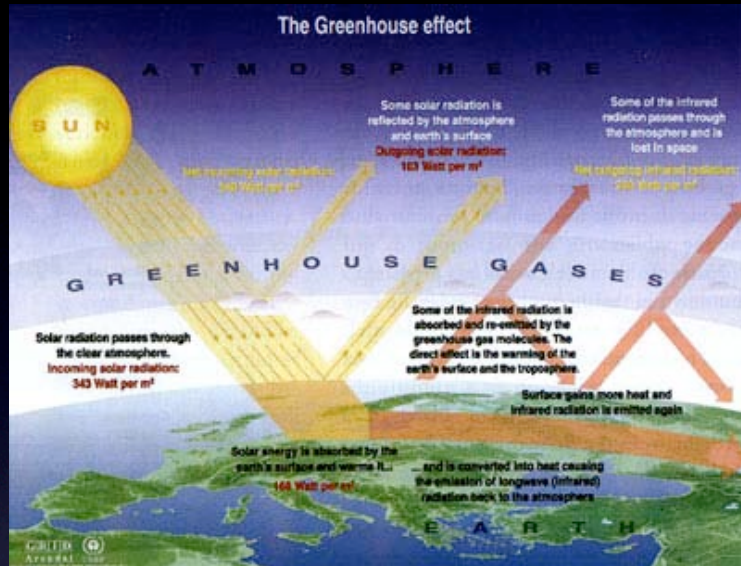
Our Modern  
Common  
Problem: our  
food supply  
chain scale &  
abuse of energy  
puts us all at  
risk.



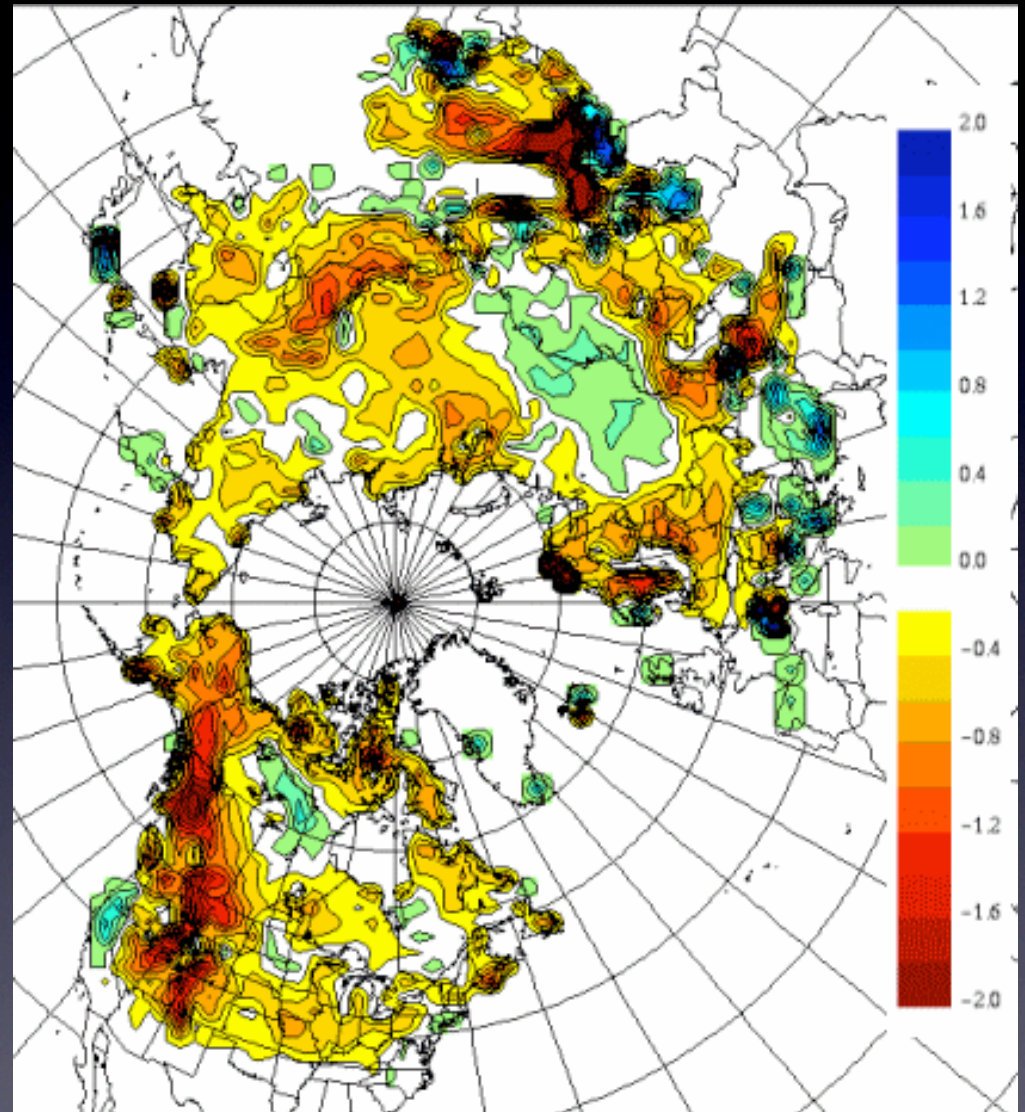
This high energy  
use- the  
hub & spoke  
system is wasteful  
& has no future:  
not a wish but  
from peak oil  
price shock &  
collapse of the  
network.







Any  
guesses as to  
what this is ?



# EXAMPLES

## Inconvenient Cities?



- Los Angeles 13 million
- Vancouver Metro 2.5 million
- Nelson & Region 10,000
- Spuzzum 25 people

New definition of comfort zones: cities determined by ecology: the support level of local environment- an old concept but reinforced by the end of cheap energy.





# Impacts causing Decimation

- Loss of cheap energy, oil price shock
- Loss of economy, loss of tax base
- Loss of access to abundant cheap food
- Loss of personal & industrial mobility
- Loss of environmental protection from home to regional ecological stability
- Loss of any future for your children
- Loss of community-- destabilization.



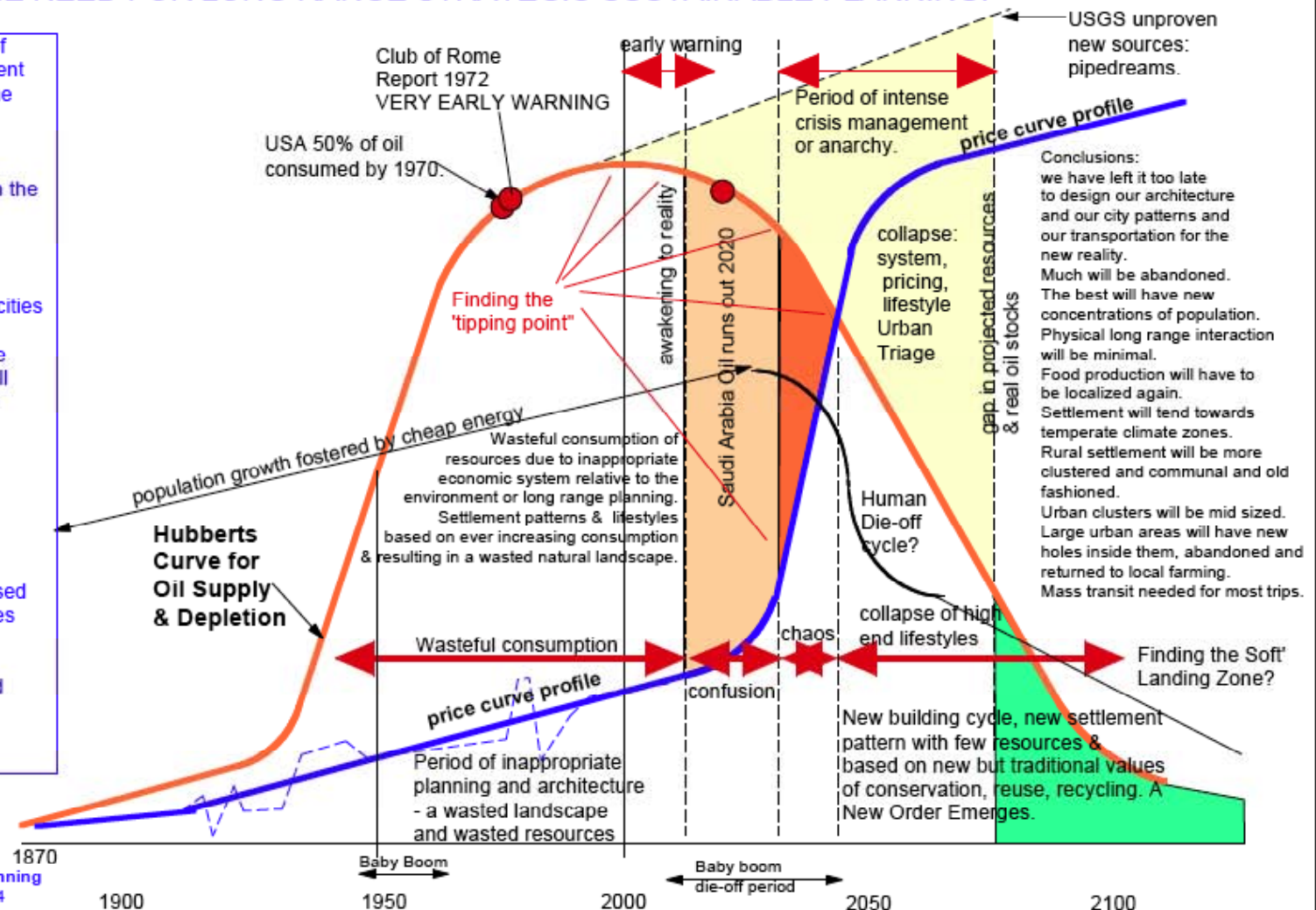
- Hubbert's Curve and Cultural Sustainability

THE DEPLETION OF RESOURCES & THE IMPACT ON PATTERNS OF HUMAN SETTLEMENTS:  
THE NEED FOR LONG RANGE STRATEGIC SUSTAINABLE PLANNING.

We are neglecting the design of appropriate patterns of settlement & transportation systems for the fast approaching new reality of energy scarcity & resource depletion.

We need strategies to deal with the following new realities:

- settlements will tend to be located in temperate climate zones & on higher ground.
- large sections of our existing cities will be abandoned as they are unsustainable. New appropriate concentrations of population will emerge as physical long range interaction becomes minimal.
- food production will return to restricted smaller areas and serving local needs.
- mass transit will be used for inter and intra city movement of people & goods.
- settlements will be compromised of smaller towns, smaller houses & narrower streets.
- localized industry, farming & market return. Proximity to food production, social networks & natural reserves will mark points of new community.

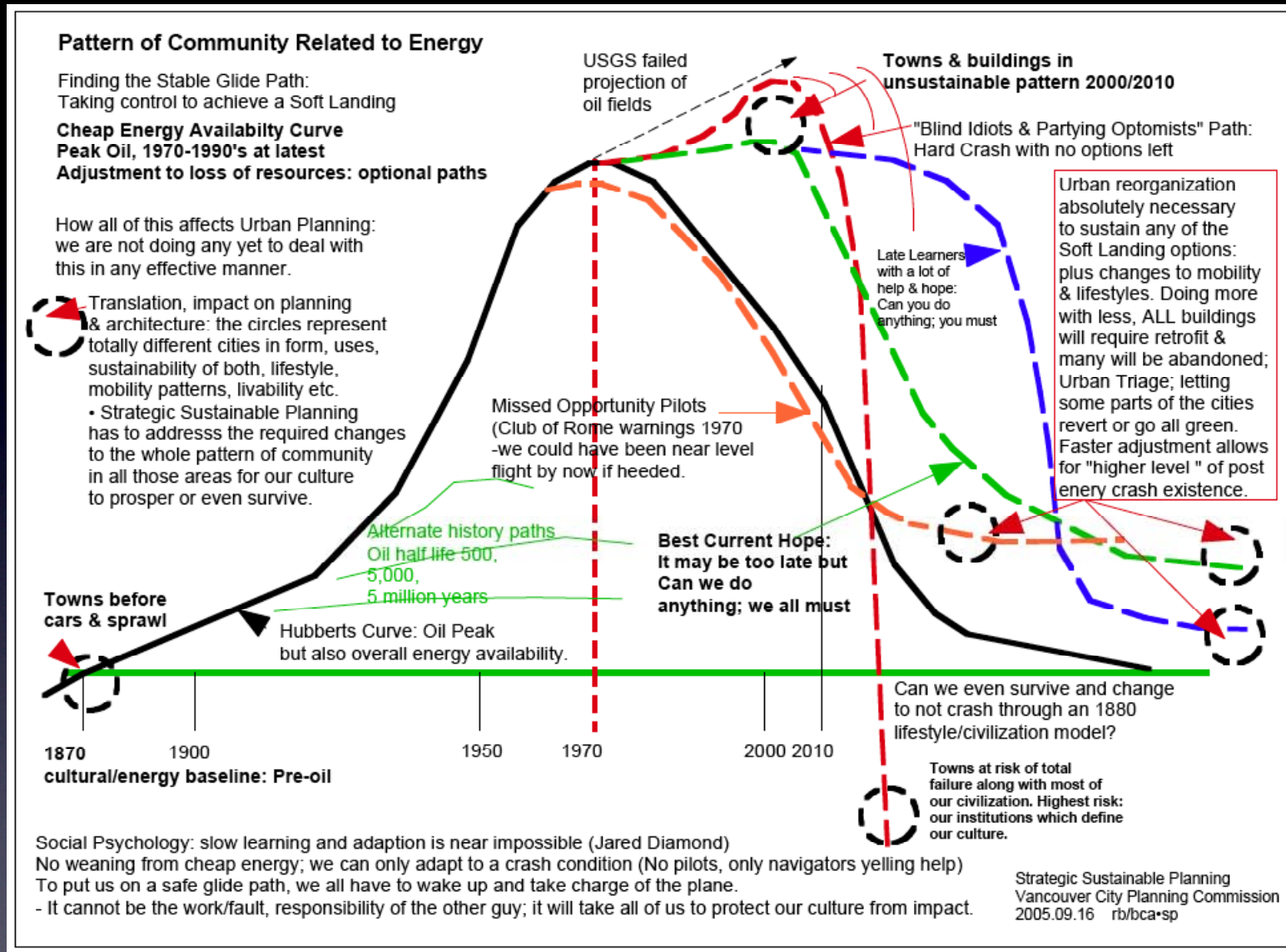




# ● Principles for selecting sustainability criteria

- 1. Certain characteristics or criteria may be used to describe a desirable and sustainable community.
- 2. These criteria are subject to measurement by various indicators.
- 3. The criteria and indicators must be derived through a community interactive process and reflect some degree of community consensus.
- 4. When making a decision regarding a particular policy, project or action, the community must address *all* of the criteria simultaneously.





- Finding Stable Urban Patterns with less energy





# Explosive Scenarios

## Rapid Differential Migration

- No matter how unlikely, you have better assets than others, refugees seek you out.
- Influx of people & assets shuffles economy
- Local demand for food escalates faster than population growth as shipping costs rise
- Standard of living falls faster than without immigration as displaced people outnumber those with assets.
- nature of asset values overall changes



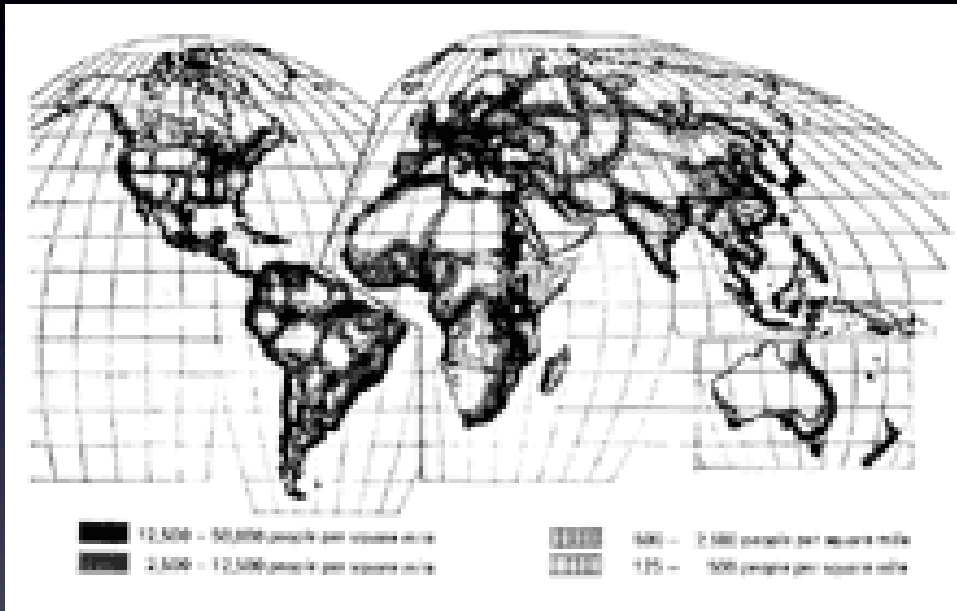
# Who says so?

- James Lovelock: Revenge of Gaia & numerous writers in various fields.
- Club of Rome Revisited
- United Nations
- US/CIA FBI NSA
- CSIS Interpol RCMP
- World Assembly/Concerned Scientists

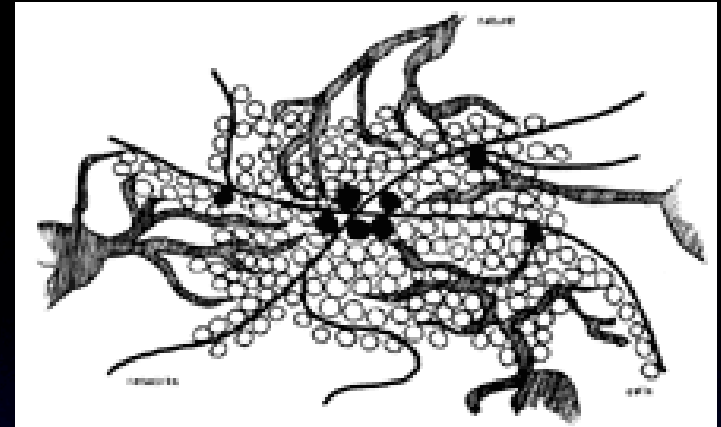




# In contrast: Ecumenopolis

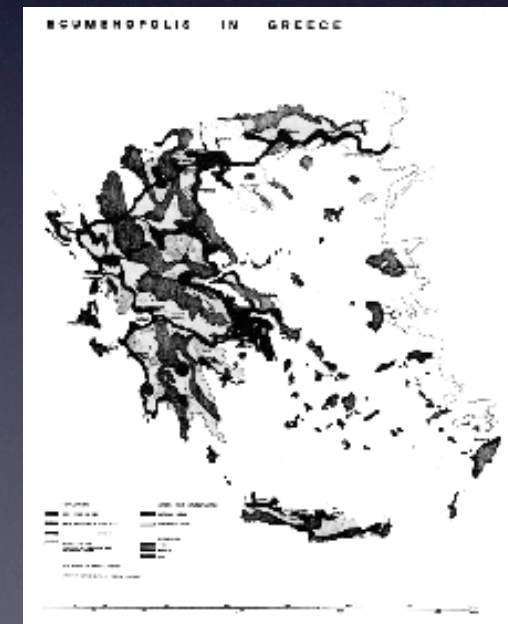


Urbanized World?  
- an image from 1950's  
-an icon of endless growth



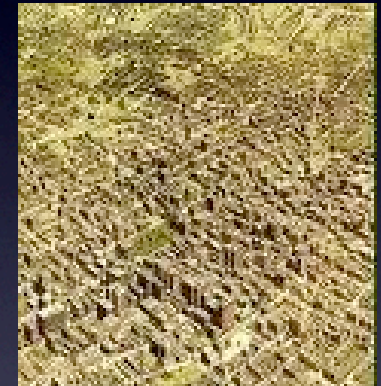
Networks for humans,  
but weak ecosystems?

Greece, for example



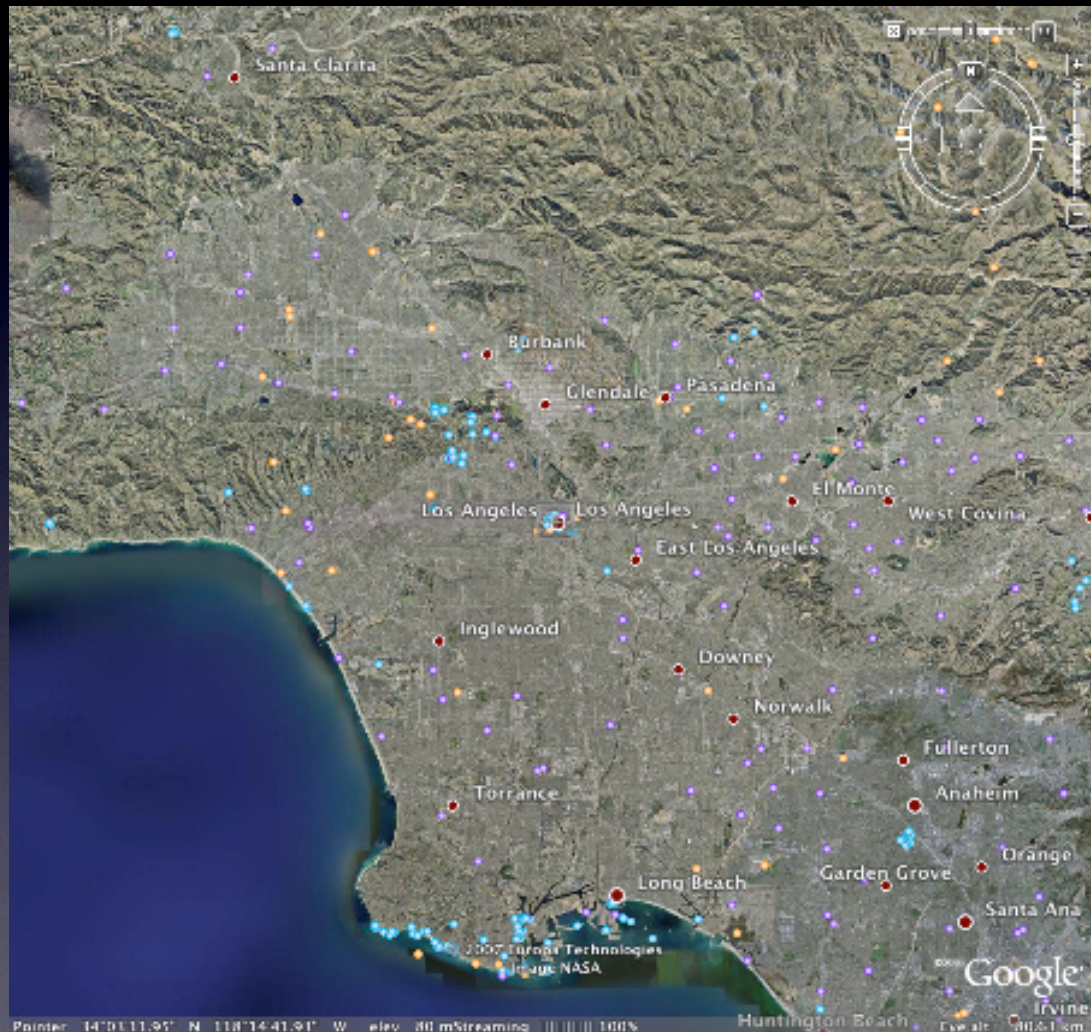
# Unsustainable Sprawl

- Los Angeles, due to sheer scale is not sustainable.
- Further growth is not an option
- A decimation from 13 million to 1 million?
- The disperse pattern may save LA
- The new pattern of villages & farm works
- The biggest concern is water





# LA: 13 Million people



Urban Sprawl  
-in a dessert  
-water shortage  
-car dependent

a future of villages  
with farms?

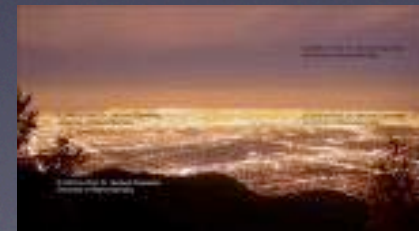




# LA Reality Check



- Already over extended as an urban area
- Environmental Footprint is into third world
- Food sources past peak, soil is salting up
- Water sources are over-stretched
- Infrastructure is too extensive to keep up
- Yet pressure builds from Mexican migration





# 2012 CNN News

- South California Earthquake, east routes cut
- Under NAFTA, Mexico sends in aid & troops
- They don't leave.
- 2014: Federated New Joint Territory State of South California, sends elected representatives and taxes to both Washington & Mexico City.



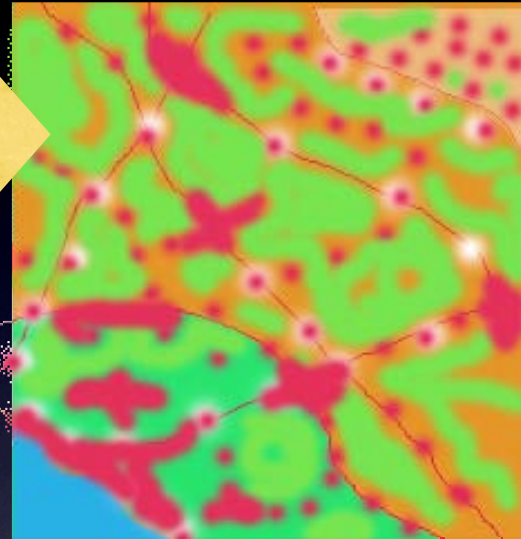
# Alternate Patterns LA

Think about to where 6 million people are moving?

Sprawl &  
highways  
2007



Dense  
Villages &  
Farm Claw  
Back 2014



- Hope even for Los Angeles, in the Post Oil Era?
- Urban Villages coalesce, green fingers grow farms?
- Fast rail again replaces highways, after out-migration.
- First industry is food, food, food. Just add water.





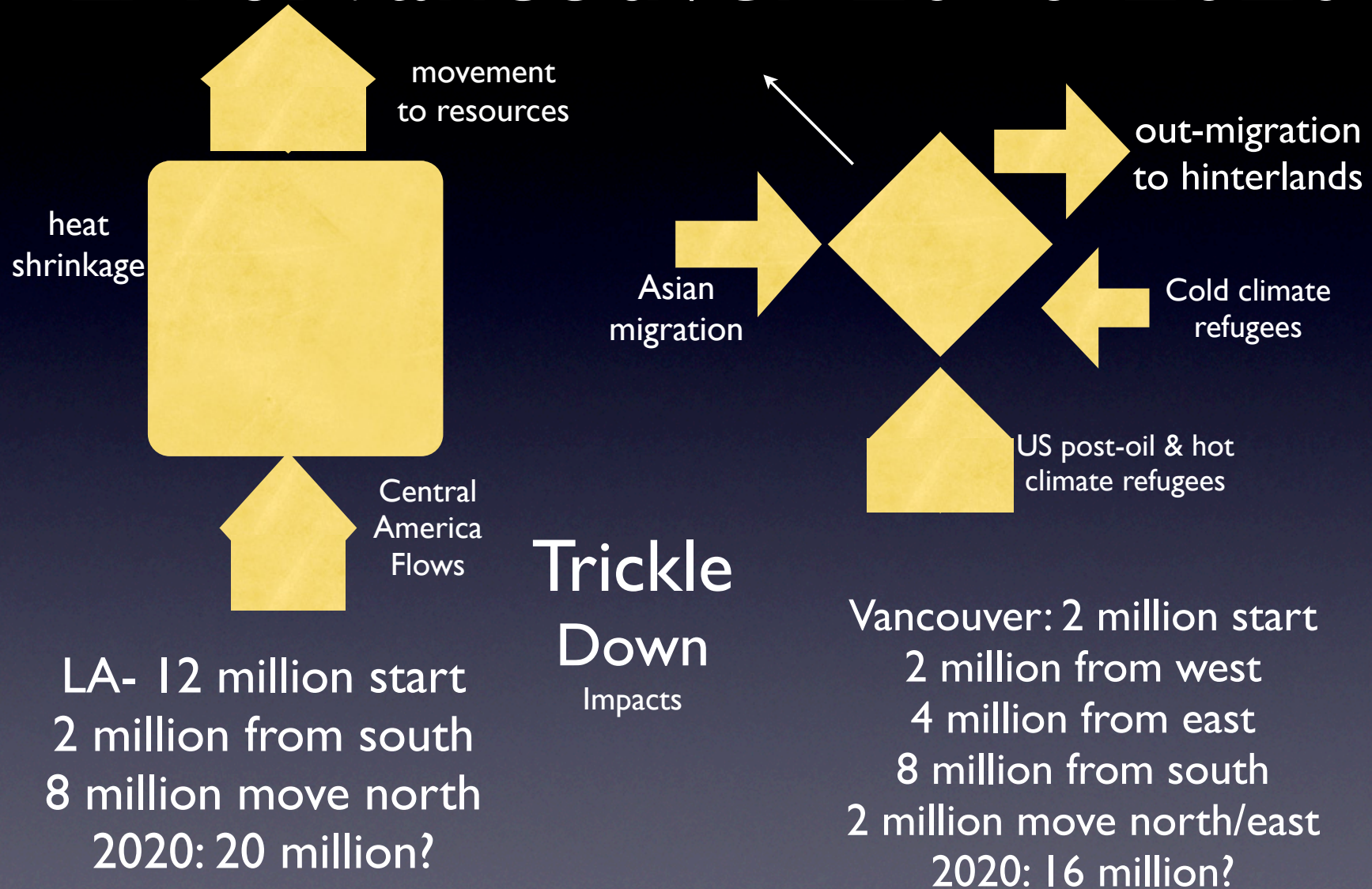
# LA: any best hopes?



- Post oil pattern: can villages be made to work, can empty spaces return to farm?
- In-migration from south will be exceeded by out migration to the north: how far north?
- All lifestyles must be in decline: the current “wealth” is not portable.
- One migration will cause displacement in turn causing movement in other places.



# LA & Vancouver 2010-2020





# Unsustainable Metro

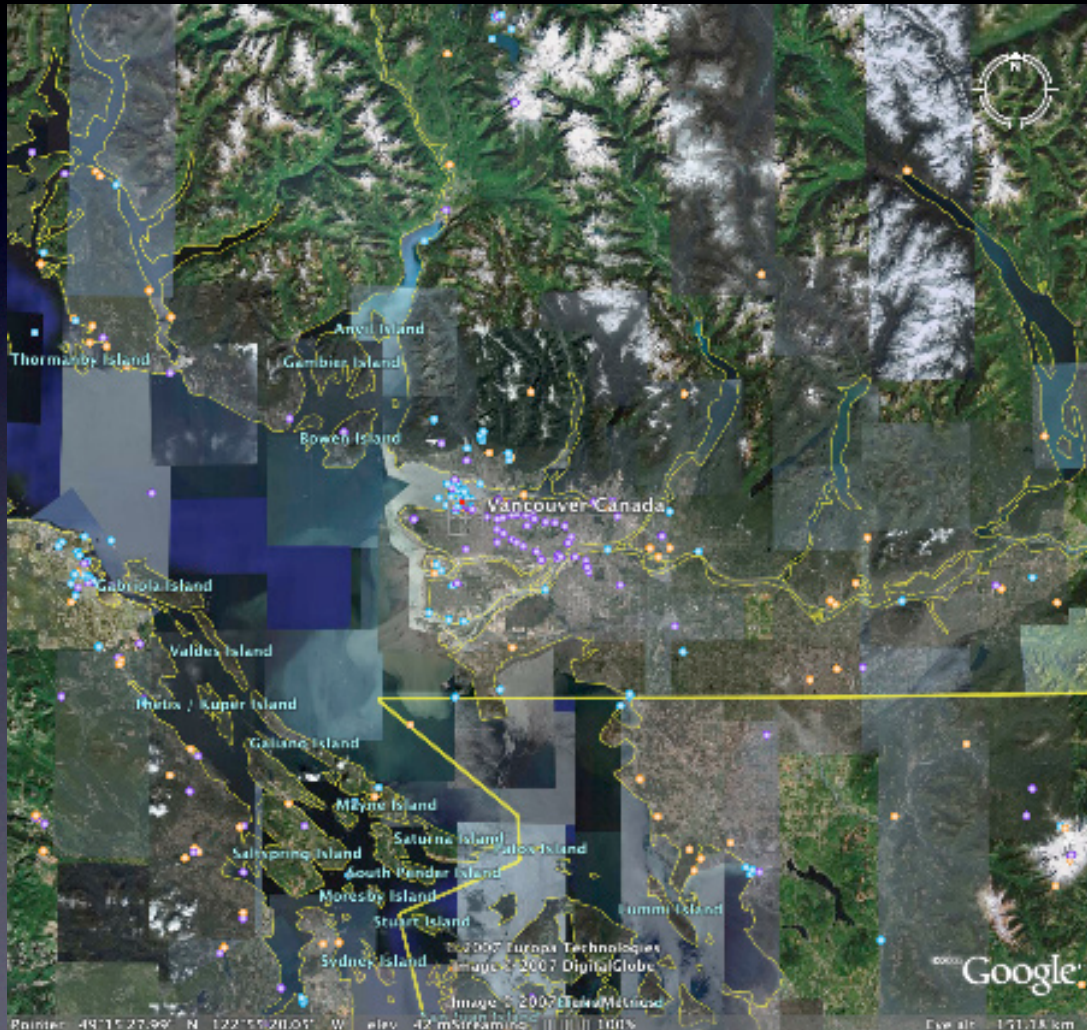
- Vancouver Metro has a sustainable basin for a million if the current settlement pattern changed.
- The basin in fact attracts people from places under greater stress: refugees from peak oil and global warming.
- But the area is already over its sustainable level, so further growth is likely but a poor option for the existing population & refugees from west, south and east.





# Metro Vancouver

Hope to Desolation, Whistler to Whatcom



2 Million people  
A lush farmland  
Wonderful water  
benign climate

but is it enough  
?

planning for success...  
in-migrants go where?





# Post -Oil, Soil & Money

- Cheap energy allowed for patterns of waste but also cheapened food & farmland
- The Green Revolution of crop bounty will reverse, causing new shortages and famine.
- The loss of cheap oil, pesticides & fertilizers will make farmland more valuable again but human energy, not oil will be needed.
- Petrochemical companies won't tell you all of this as they rush to buy farmland to become vertically integrated: to take advantage of you at every level of need.



The new farmland rush coincides with the US market shake-down as Oil Price Shock kicks in- happening already.



# Vancouver: best hopes?

- Farmland is needed, vital to more than local needs, but also to BC and Prairies & likely beyond.
- The hill town potential has not been explored at all. (95% of BC)
- The coastal settlement aspect is overlooked. (Mediterranean city).
- But the limits to growth have already been exceeded- what pattern did the First Nations bear upon the land? -It is an indication.





# First Nations: Coastal Villages

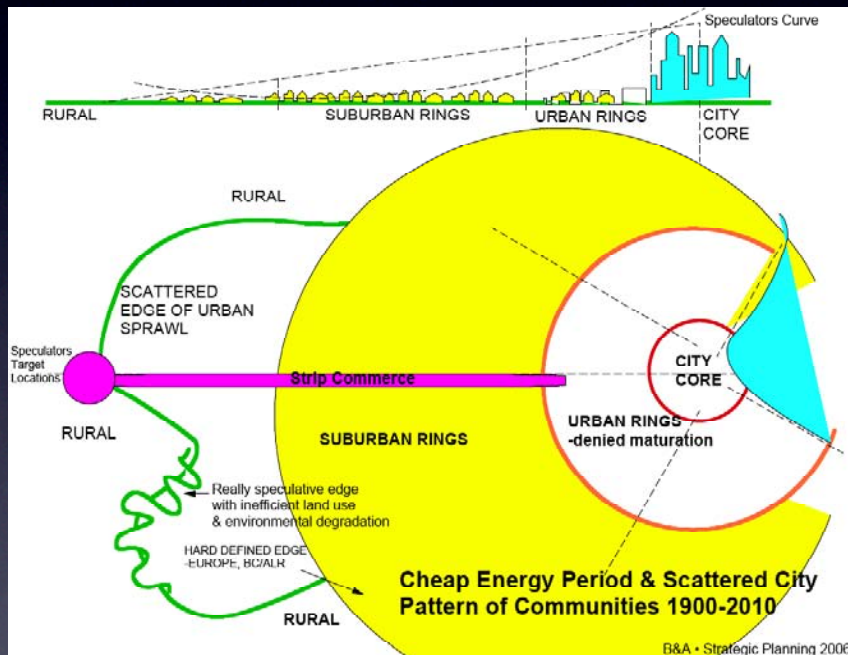


Vancouver area pre-colonial settlement pattern.  
With more farming, their populations would have been higher.

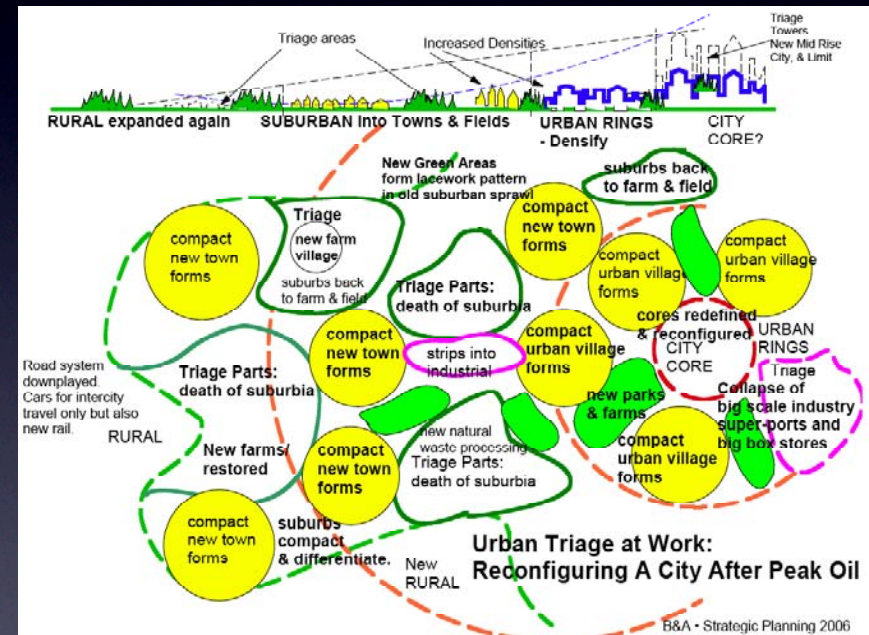




- Reruralization of the Suburbs & Claw back of farmland.
- - not a wish -but a necessity to achieve sustainability.
- the new Green fingers into urbanity= sustainable forms.



(The current pattern is possible only with cheap oil).



(Suburban fingers increase to urban village density).

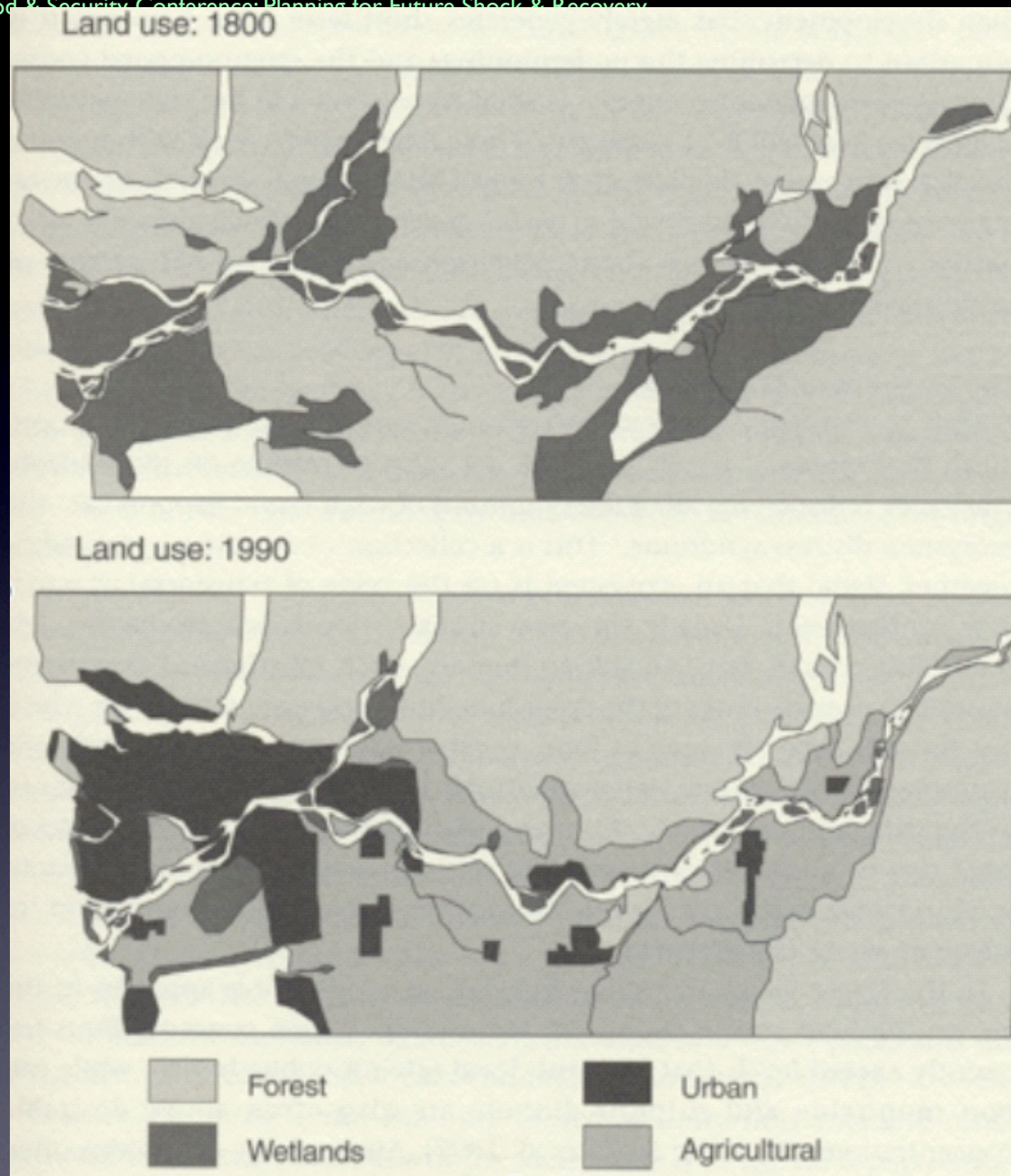
# Marbelization after Peak Oil





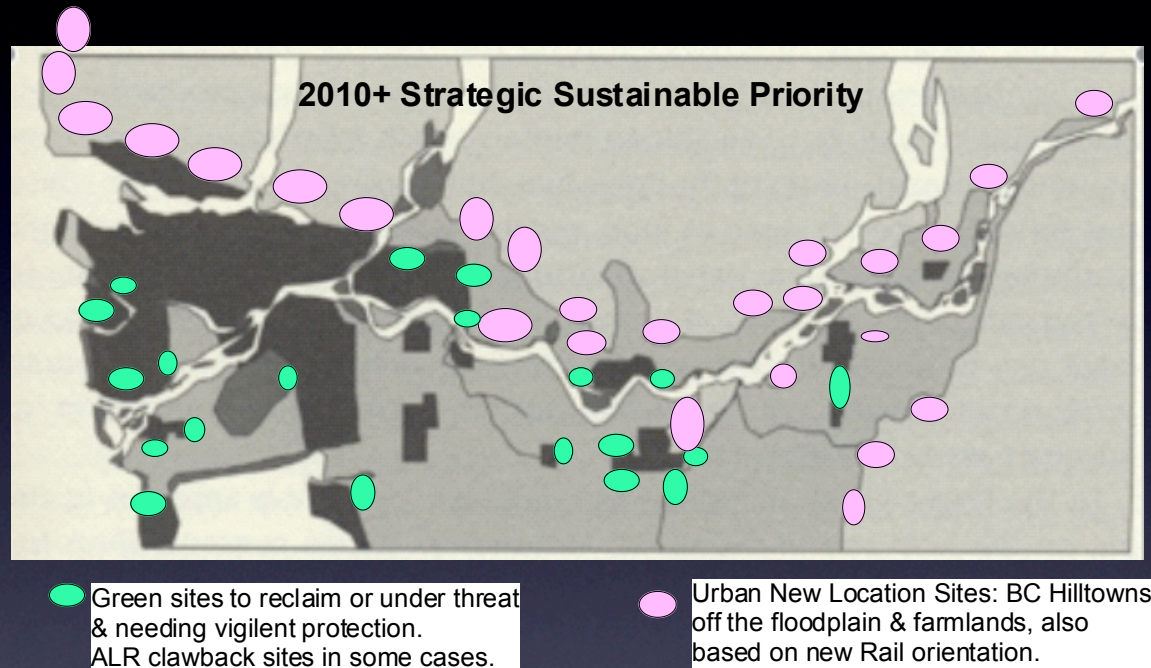
# Land Conservation Starts Now

Land conversion is not a one way street, we have to turn some trends around to become Really Sustainable.





# New Directions



New Directions must include claw-backs of ALR losses plus pulling out of floodplains given rising oceans levels in the next century.





# CBC News 2012

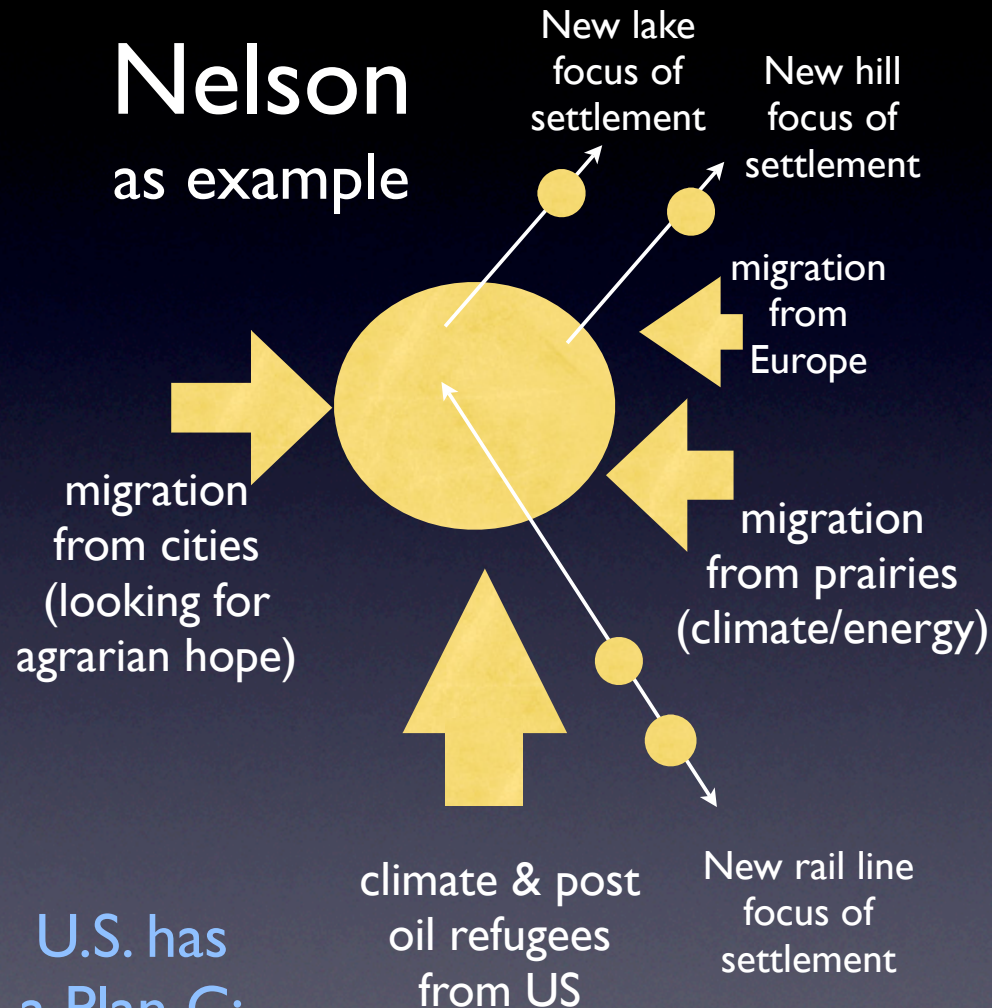
- Huge population increase: new town sites opened on North Shore, Howe Sound, Sunshine Coast.
- Burrard Peninsula plans a quadrupling of population, to house 4 million.
- Fraser Valley made **Essential Agriculture Zone** under **Federal Emergency Measures Act**.
- Soil & silt recovery from Fraser River ramped up to upgrade farmlands & flood-proof the Delta.



# Mass Migration: Oil & Climate Refugees Hinterland Impacts

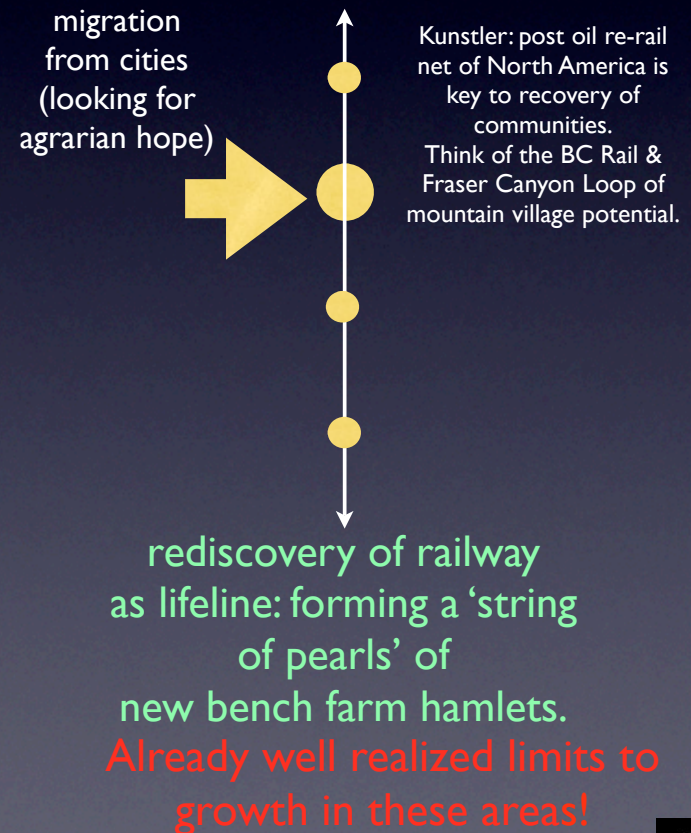
“Deluge,  
not  
trickle down”

## Nelson as example



U.S. has  
a Plan C:  
Canada.

## Spuzzum as example





# What can get worse- \$ & Land

- Peak Oil Price shock creates banking instability & greater divergence between rich & poor; we better learn to help each other. (For local economic protection: Bologna models.)
- Loss of CAPITAL PORTABILITY means more migrants move without assets or ability to pay for new lands or shelter. The value of most goods declines, but not food, water or land needed to access them.
- This introduces a new risk of labour contracts, even a new partial enslavement or a “new serfdom” as access to land is controlled by those that have land in the beginning.
- Hopefully the fact that the government in some provinces and states have large land holdings and the ability to provide land but also restrict access to make sure land & access to land is not abused.



# Nelson: County Seat

## Nelson as Laboratory Example

- Nelson is bountiful but isolated
- Isolation could increase,
- North south is the “easy orientation”
- Not enough arable land to take much growth?
- Towns: Is a rail based string of pearls possible, or lake oriented villages in a post oil economy?
- Next Tier: a new Riondel and Kaslo, then new farm hamlets dictated by our geography, soils.







# Nelson

## A Region of 100,000?

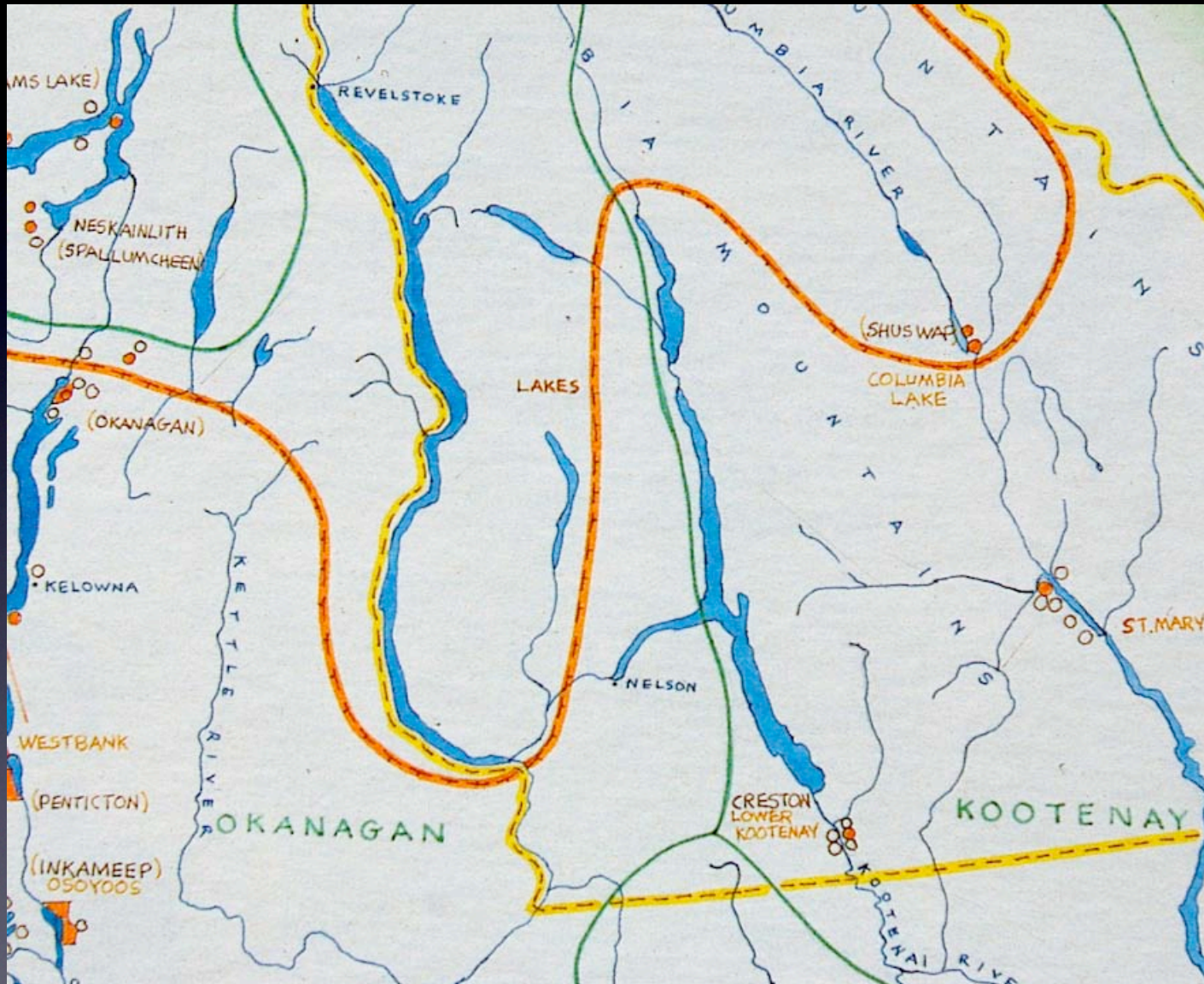
### Old World Lessons: Learning from Bologna?

- a new economy is needed
  - based on a network of industry/farm co-ops
  - many co-ops providing wide range of goods, augmenting each other.
- village-based with no one left behind.
  - yet all trade with the world while locally self sufficient.





# ● First Nations Kootenay & Neighbours





# CBC News 2013

- Salmo Creston Highway closed due to high rains and slides- no money to re-open it.
- Oil price hits \$400/barrel. Rationing of gas and oil cuts permitted usage to 20%. Most cannot afford that either. Airship service starts.
- Federal Provincial agreement starts new electric rail lines: planned Vancouver/Penticton/Nelson/Cranbrook/Calgary Line to open 2020.
- Army Garrison opens near US border.



# CBC News 2014

- Provincial government enacts City State & County Government Act. Nelson as historic county seat takes on 'State Powers'.
- Nelson County Energy Cooperative integrates hydro, geothermal and energy recycling local initiative projects.
- Nelson County Farm Cooperative offers new bench farm leases to new in-migrants.
- Nelson County forecast to quadruple population in decade



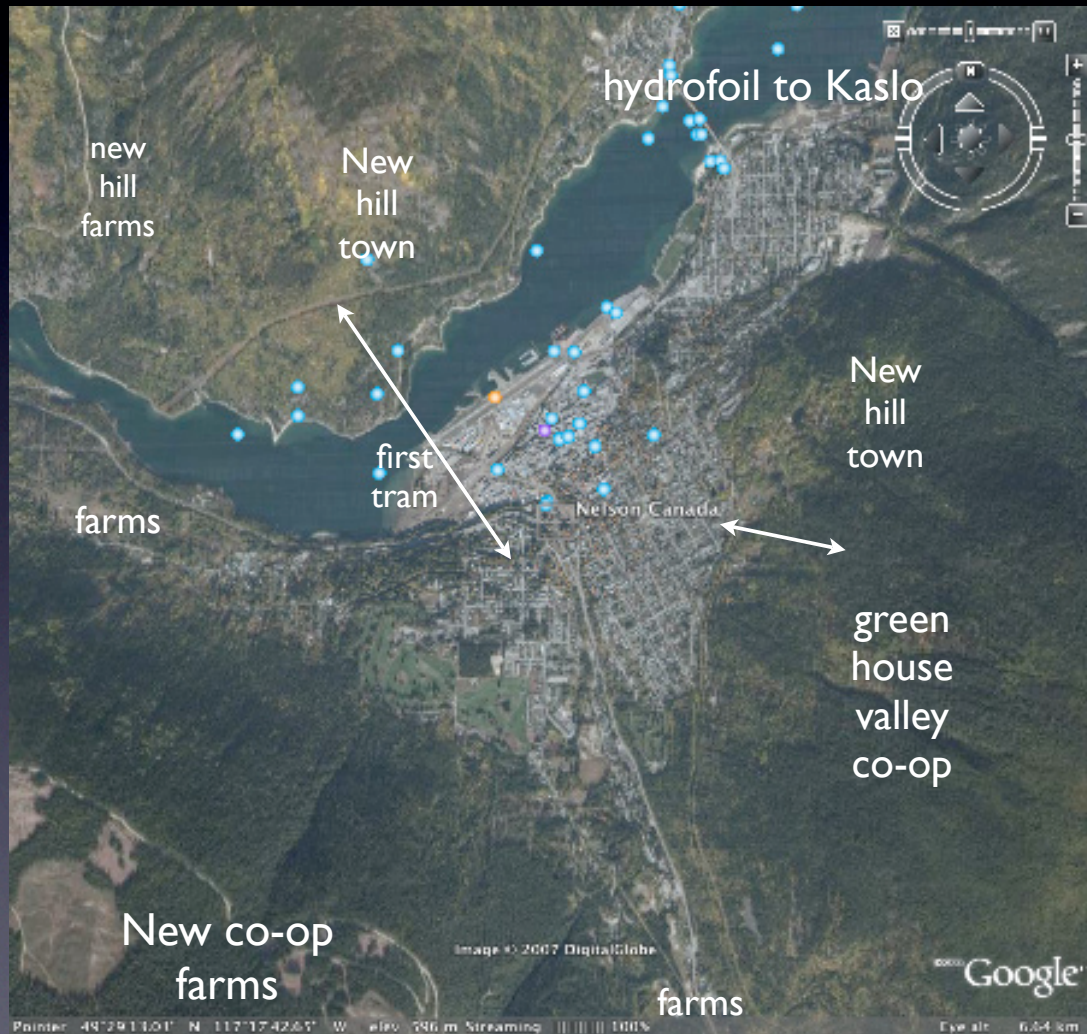


# Local News: Nelson 2015

- New town area across river: south slopes to house 50,000 in earth sheltered solar heated settlement with garden roofs. Others planned.
- Aerial tramways installed into Nelson core.
- Fast hydrofoil service starts to Kaslo & north.
- Mass battery plant opens at Trail zinc smelter.
- Creston opens up a dozen hill town sites.
- Riondel re-opens hot springs & coal mine



# Regional Capital. & regional capital.



Untapped resources  
New needs  
New opportunity



Nelson can grow but  
what exactly do these  
people do to make  
a living, starting with  
food of course.





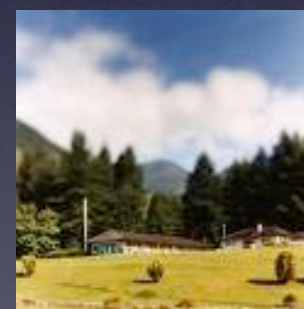
-and at the smallest scale...

# spuZZum BC

- Decimation from 25 to none, possible
- Explosion from 25 to 2500? Likely.
- Due to arable benches, location on railway
- String of pearl farm hamlets on rail line?



Just how  
realistic is  
any retreat  
to the  
countryside?





# Spuzzum B.C.

Just what do these  
people do now, and  
even more so in  
the future?



Places becoming?  
Urban dispersal?  
Pocket Resource?

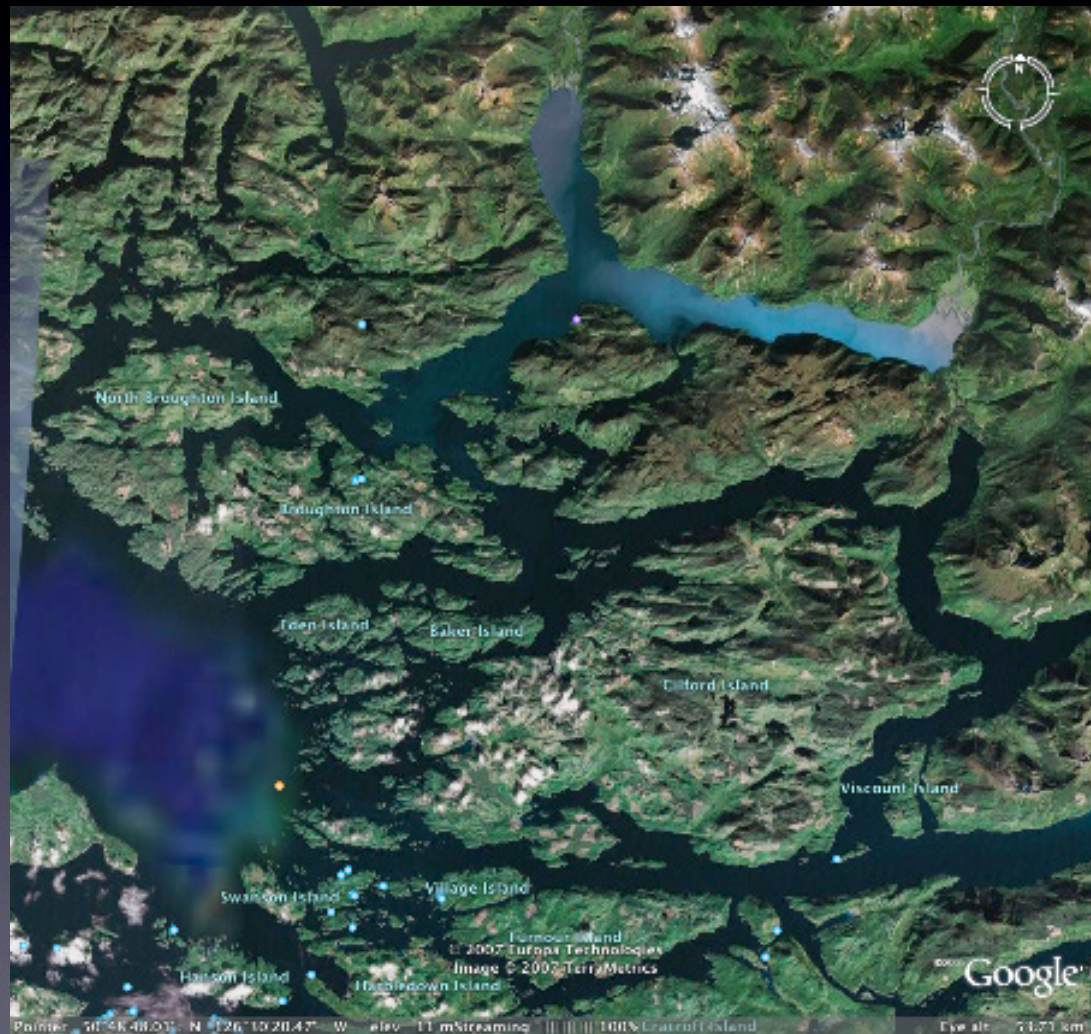
Soft Landing options:  
Alpine cable to  
adjacent valleys?

Learning from  
Switzerland?  
or Nepal?





# Archipeligo



Old notions of town  
What can this  
landscape support?

What is sustainable  
What mode of  
transport?

What was the First  
Nation pattern?

Are careful small  
footprint hamlets  
possible?



- Archipeligo: Cradle of Continued Cultures

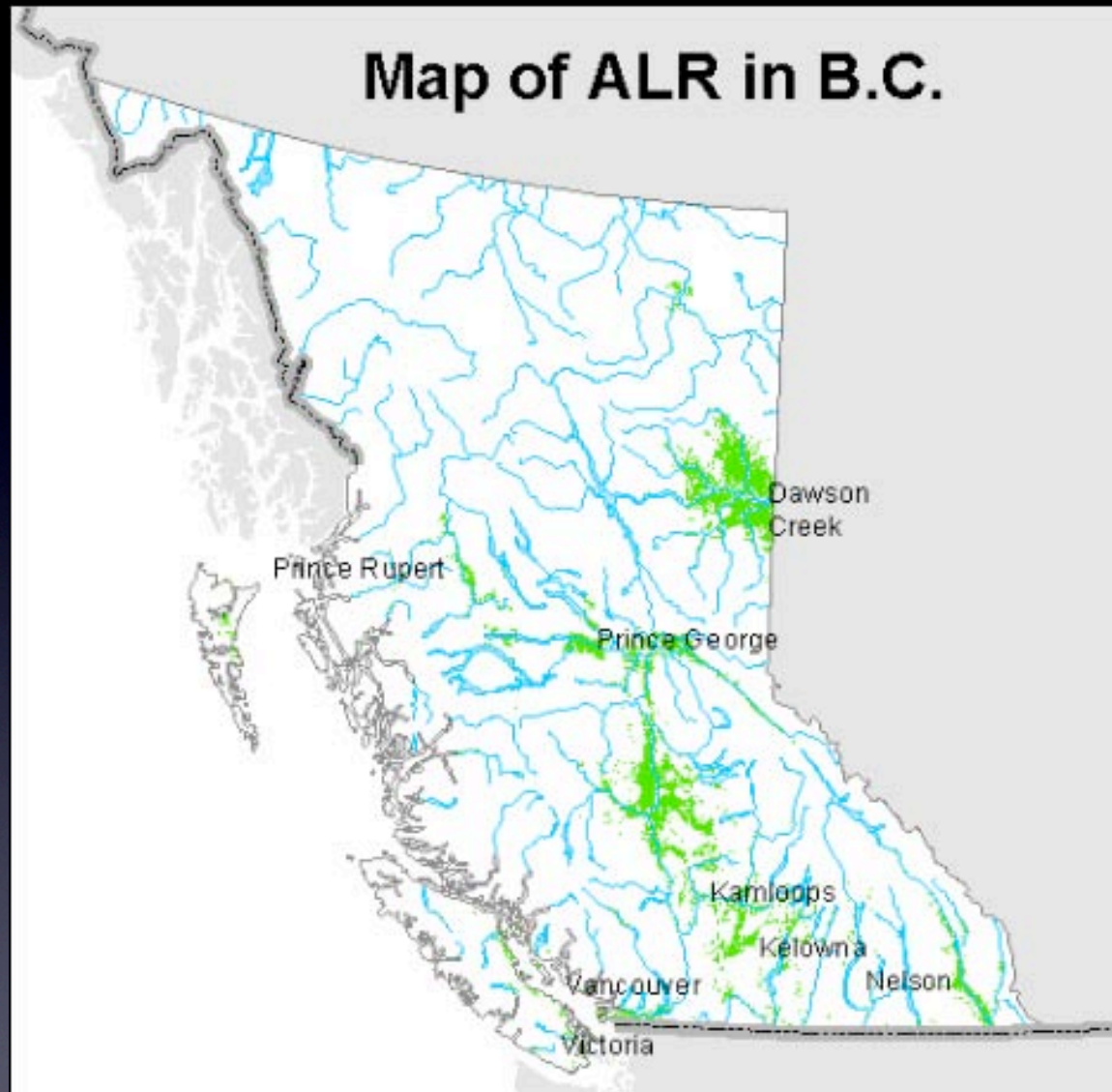


## First Nations Towns & Villages





# Food In BC?



- A practical Limit to Growth: Food Production



# Food- back in Nelson

## Food Security:

No hope from Mexico,  
Best farmlands flooded  
Farm benches dispersed  
Short growing season  
But lots of water.



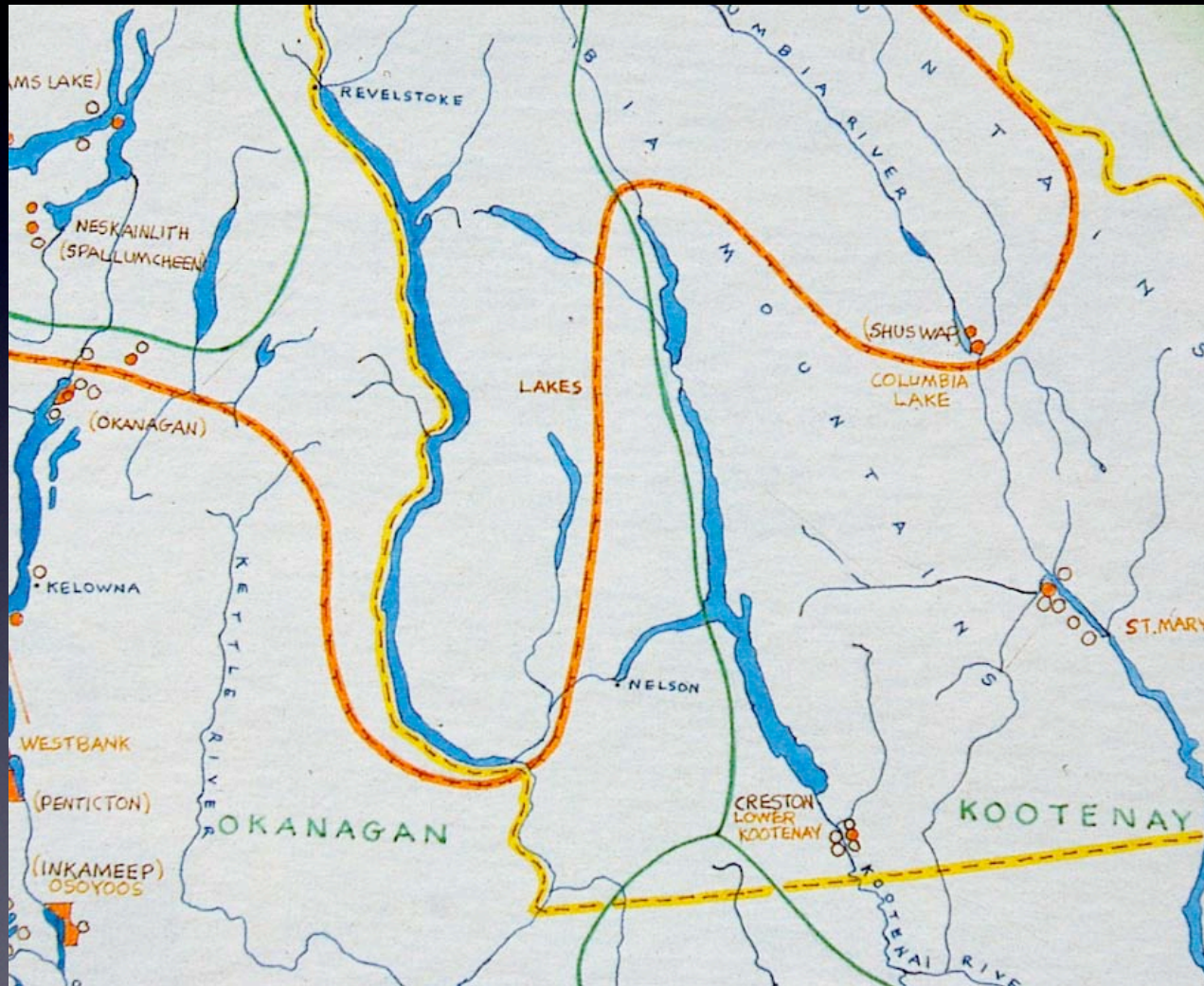
## Future Options:

Ignore signs, Crash?  
Hope for rescue, crash?  
Try to hold on, Burn Out? -or-  
Act now to achieve Real Sustainability





# First Nation count?



Small  
dispersed  
villages, north-  
south  
Migration

Hard winter  
subsistence  
Low  
population





# Techno-Rescue in Exurbia

- Bio-fuels, local production: tractors first.
- Old World Techno Rescue: Horses, start breeding now.
- Also: oxen, buffalo, llamas, sheep, goats, pigs & emus.
- New industries already in the valley: carriage works.
- Add electric car, steam car local cottage industry
- Ramp up steam engine production again for rail use.
- Prepare for air service direct to town- new aeroships.

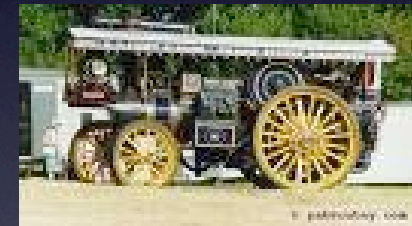




# Post Convergence

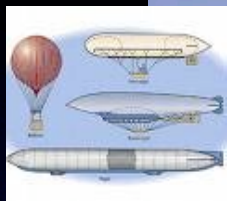


Can we do  
it better?





# It's not all downhill

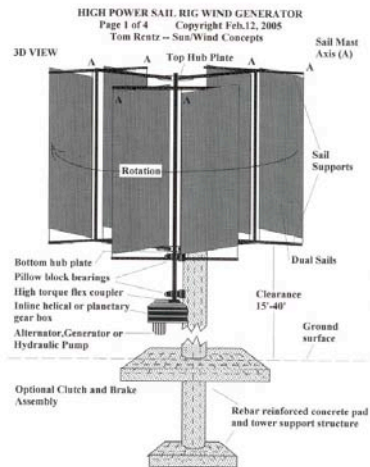


Nelson to Vancouver  
Nelson to Kelowna  
Nelson to Calgary  
Nelson to Spokane  
Nelson to Victoria  
Nelson to Cranbrook





# Wind & Waves



# Lean Market Adjustment is NOT a reversal

- This is not the same as going back to 1800.
- It will be though if we do not adapt quickly.
- We can stay ahead of collapse scenarios
- We can rescue the best of low energy tools
- We can build & adapt new technology
- The cooperation of the community is key
- This is where we should learn from Bologna

Reference: University of Bologna, Dr Pierre Luigi Sacco





# Old World Lessons?

## Visions for Alternate Futures: the Kootenays. The Farm Hamlet in a Post Oil era.

Pre-oil era: cyclical use of landscape  
Old world/third world, make the area work  
Japan, build on farmlands, then farm hills  
Post Oil era; learn from the Third World, and Tradition  
But apply new science and reasoning.



Usual first mistakes: cheap energy, no land conservation stage:  
Put housing on flat land, figure out what to do with the hill, not much.

### Post oil era: Design with Nature (McHarg) Learning how to live with a hillside.

recover forest & field  
mixed rangeland & woodlot.

housing clustered on slopes to save arable lands

This forms a whole community or village by itself.

now farm plateau

terraces for farming, plus greenhouses, water detention, waste treatment, mineral recovery

housing clustered on slopes also to help retain slope but also add hill green housing.

SSP3: Nelson 2007 Food Security Conference. Balfour & Associates • Strategic Planning



Switzerland: small towns  
Dispersed villages  
Alpine Farming  
Buildings that last  
Mountain transport







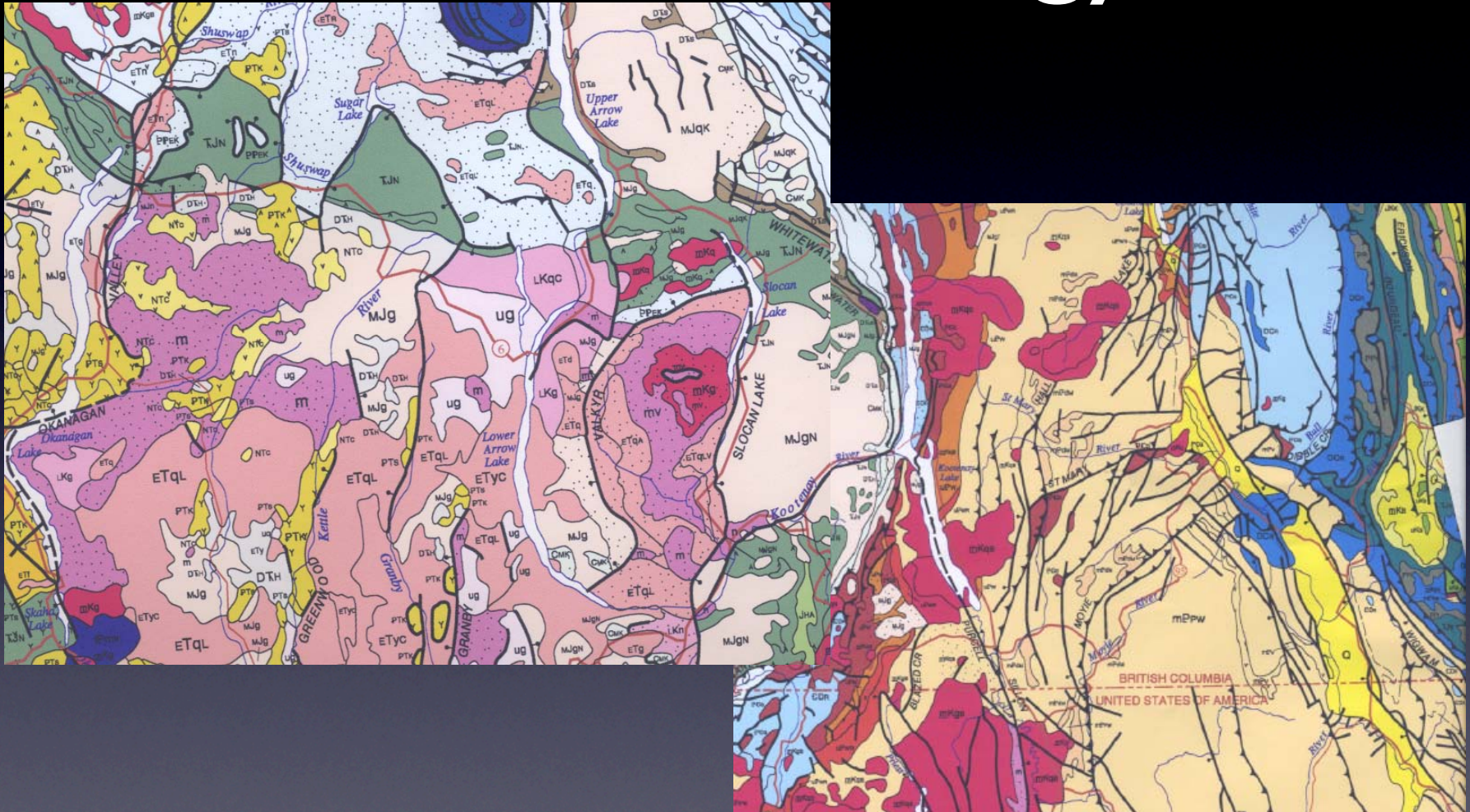
Nelson & Region

Balfour + Associates • Strategic Planning





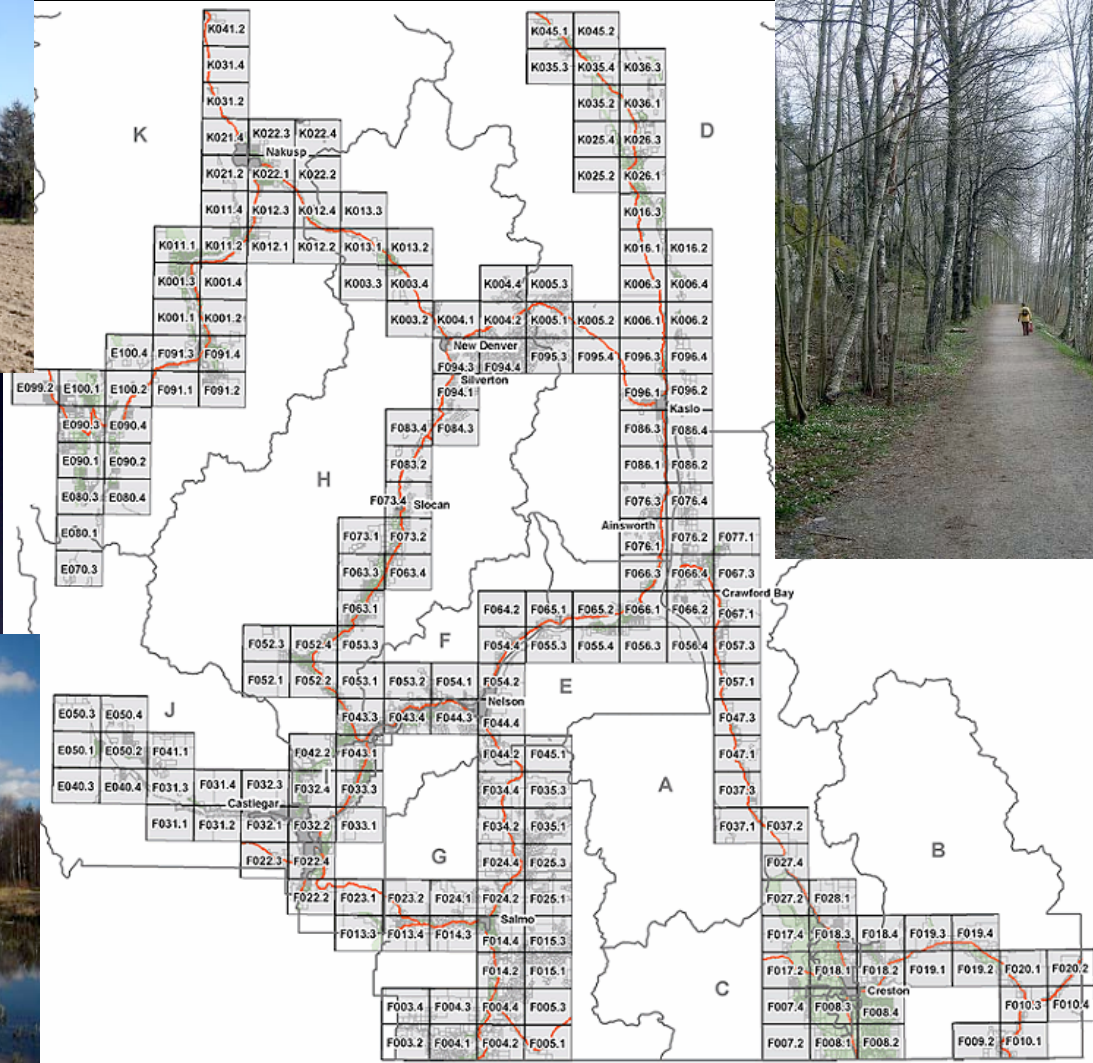
# Surficial Geology



- West of Nelson and East of Nelson







BC: How little Valley land, How little to farm.





# 'Squiggles' of Arable Land





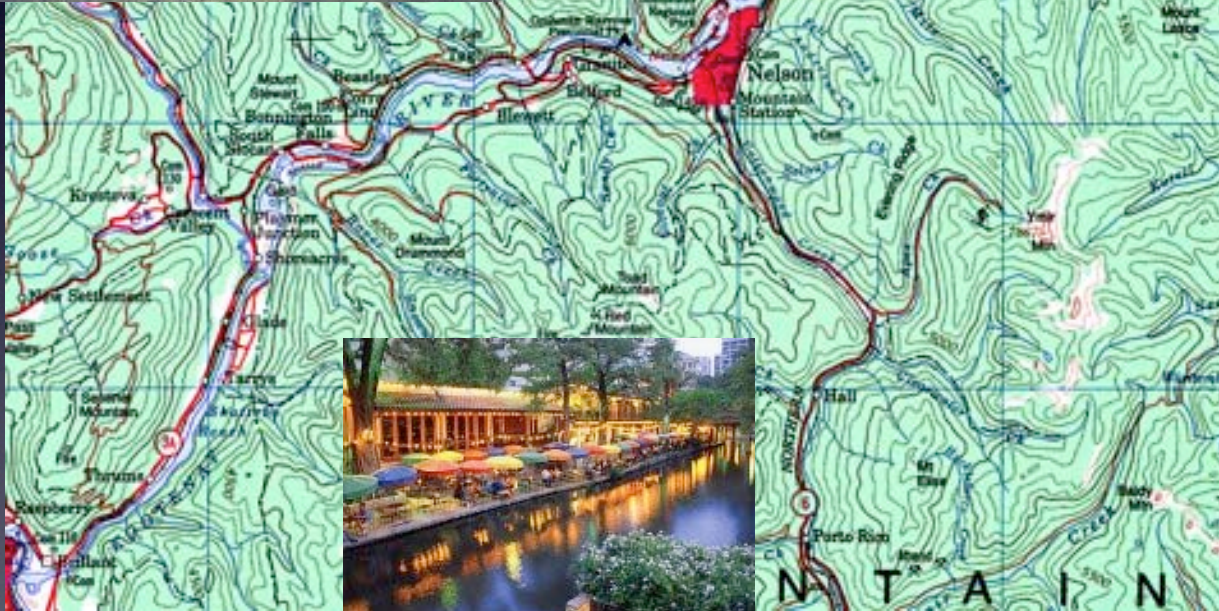
# ‘Nelson County’ Futures

- If significant In-migration from Global Factors
- New Ways of Thinking Absolutely Necessary
- Don't build on farmlands or farm benches
- Making villages fit on slopes, sized to fit
- Making sure local sustainability is the new rule
- Improve slopes for pasture, orchards, crops
- Extend summer: add greenhouses & hydroponics





# A Real Limit to Growth- not housing, but food.

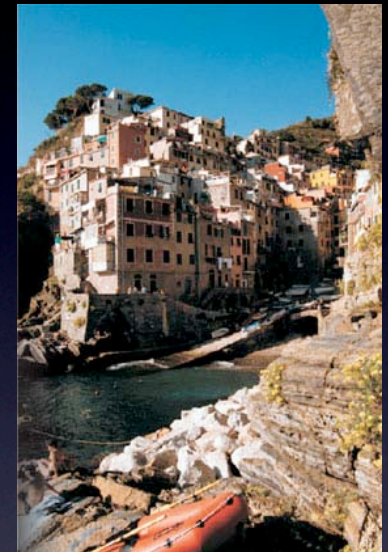
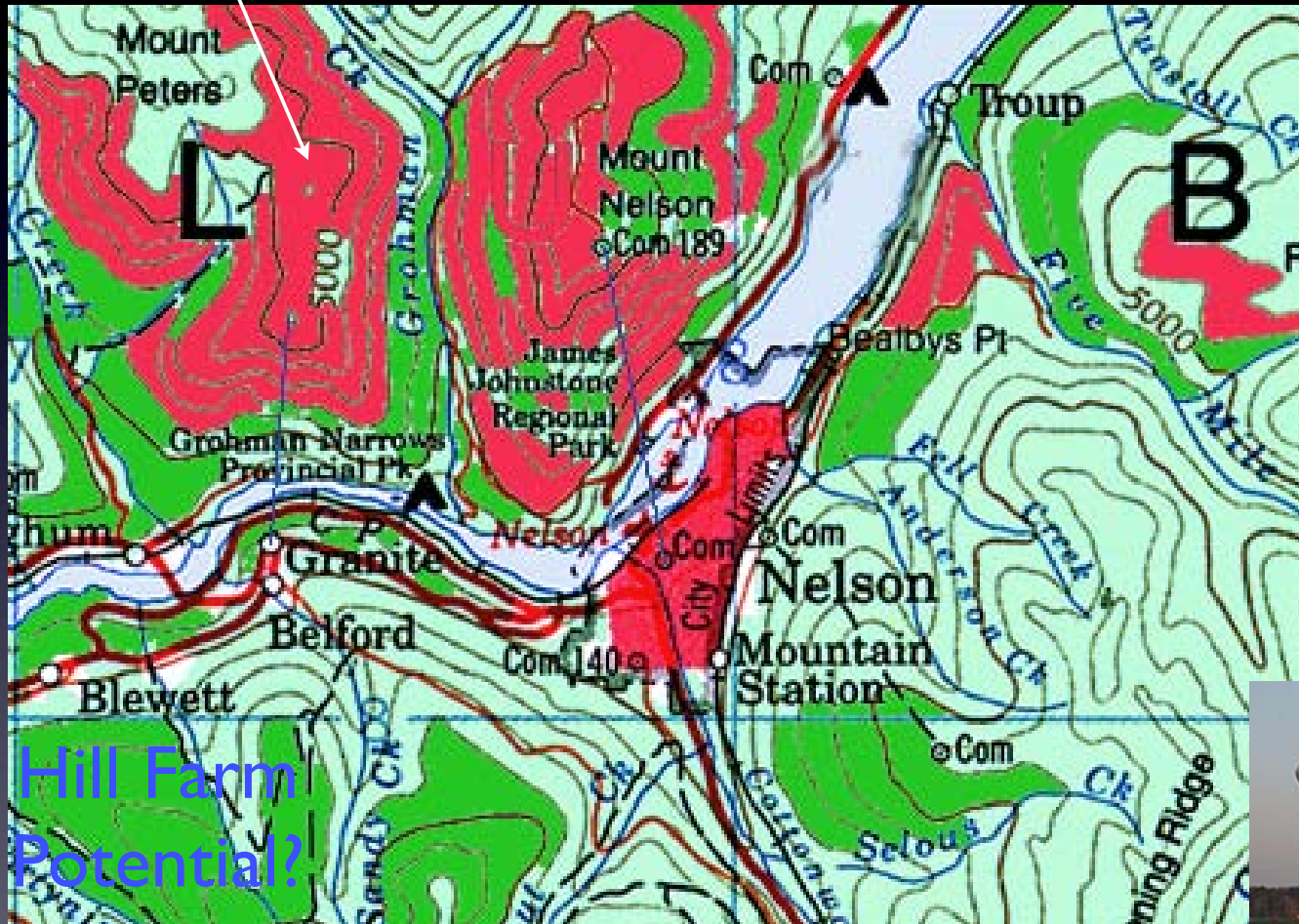


- It looks like there is not much hope for farming?





# Hill Town Potential

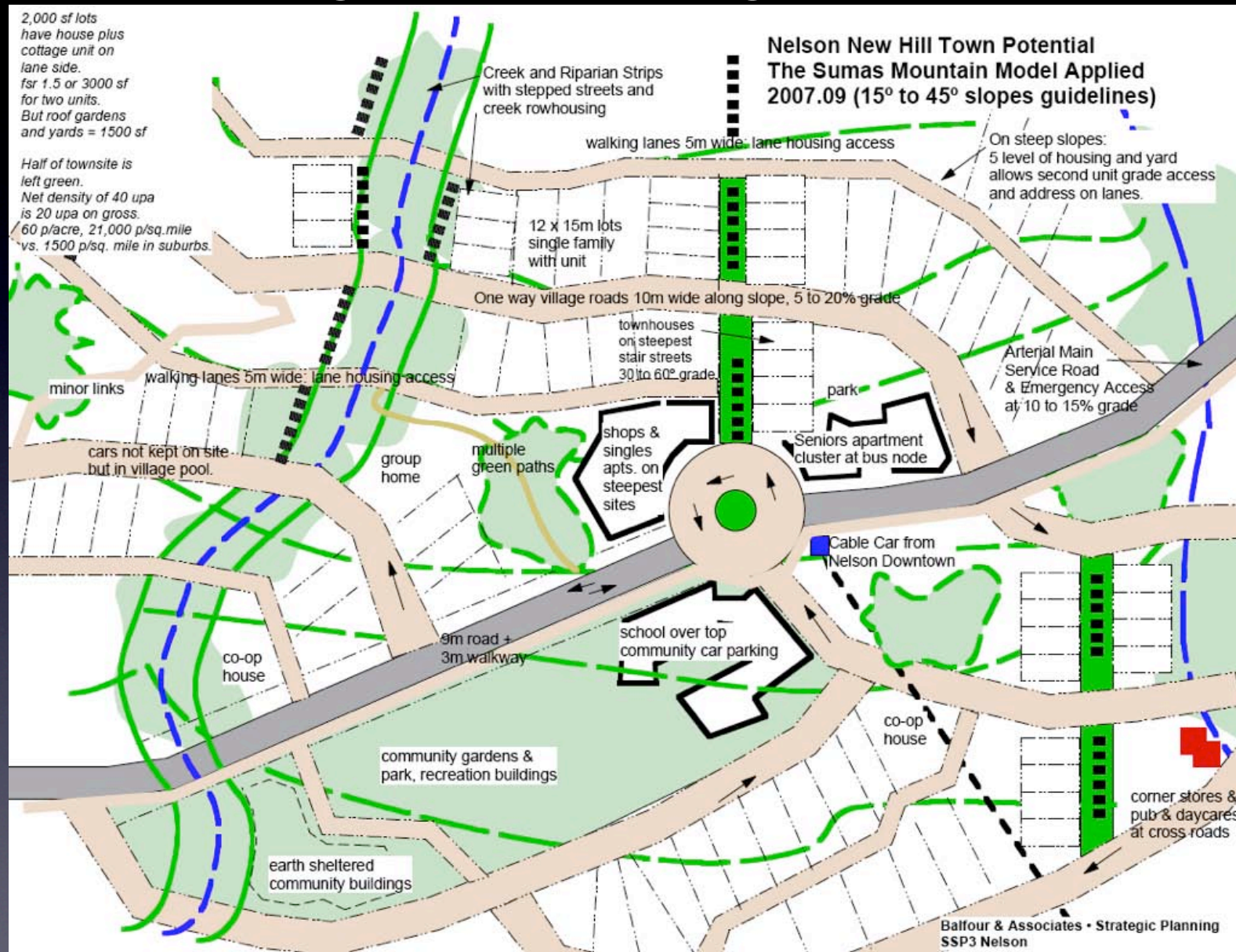


- Hill towns & hill farms: Not Business as Usual

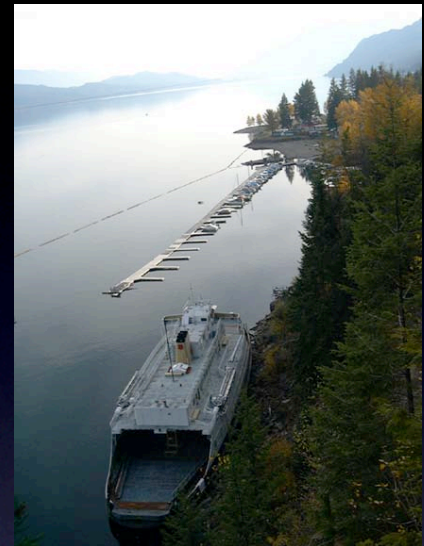
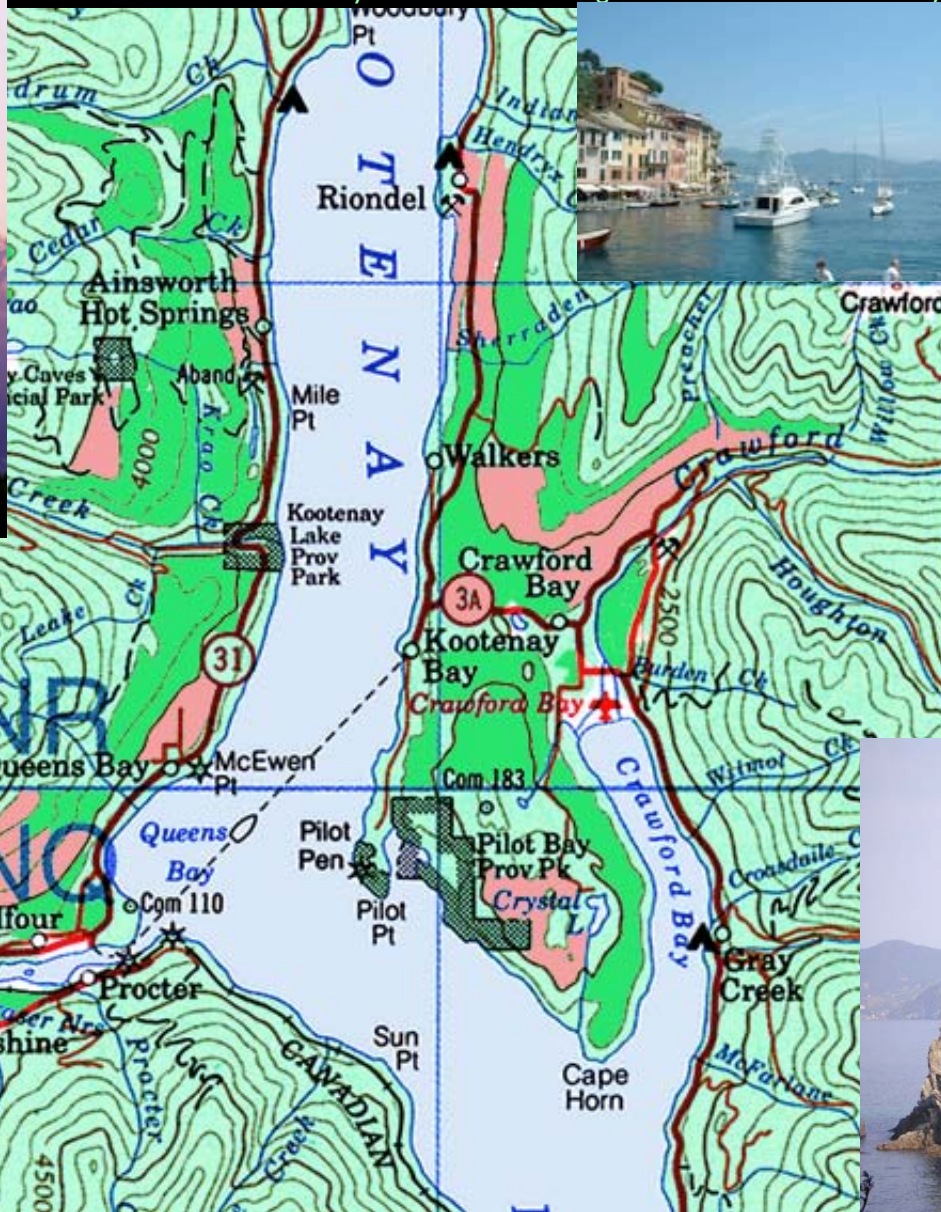




- Building on Hills, farming the terraces.





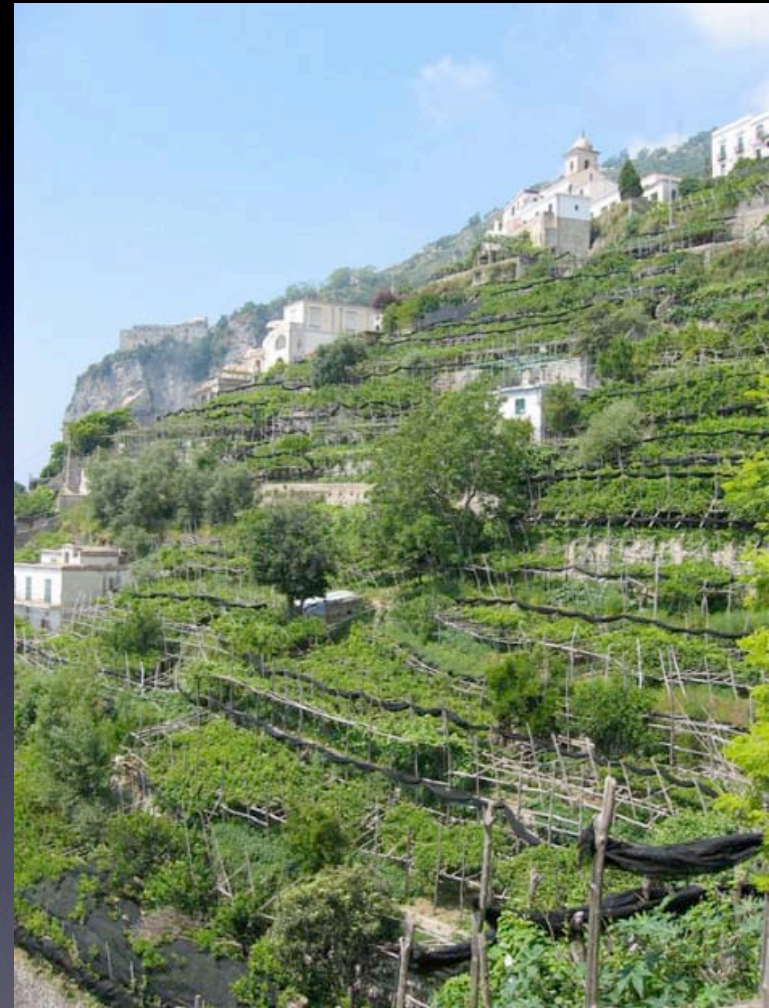


- Lake Villages, Lake Hill Farms: Swiss Models



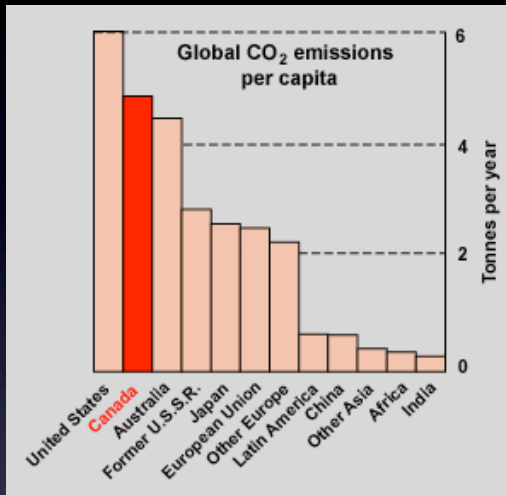


# Hills will be farmed.





# We need to learn from Traditional Communities



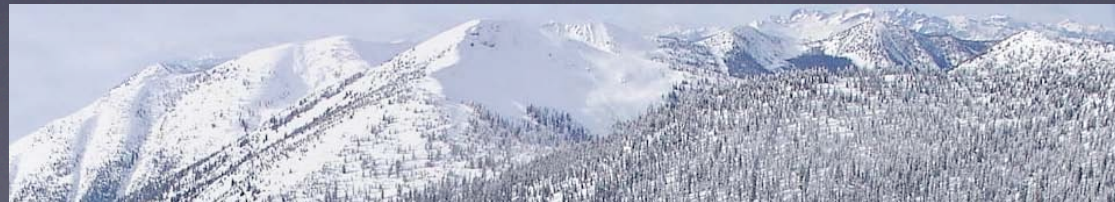
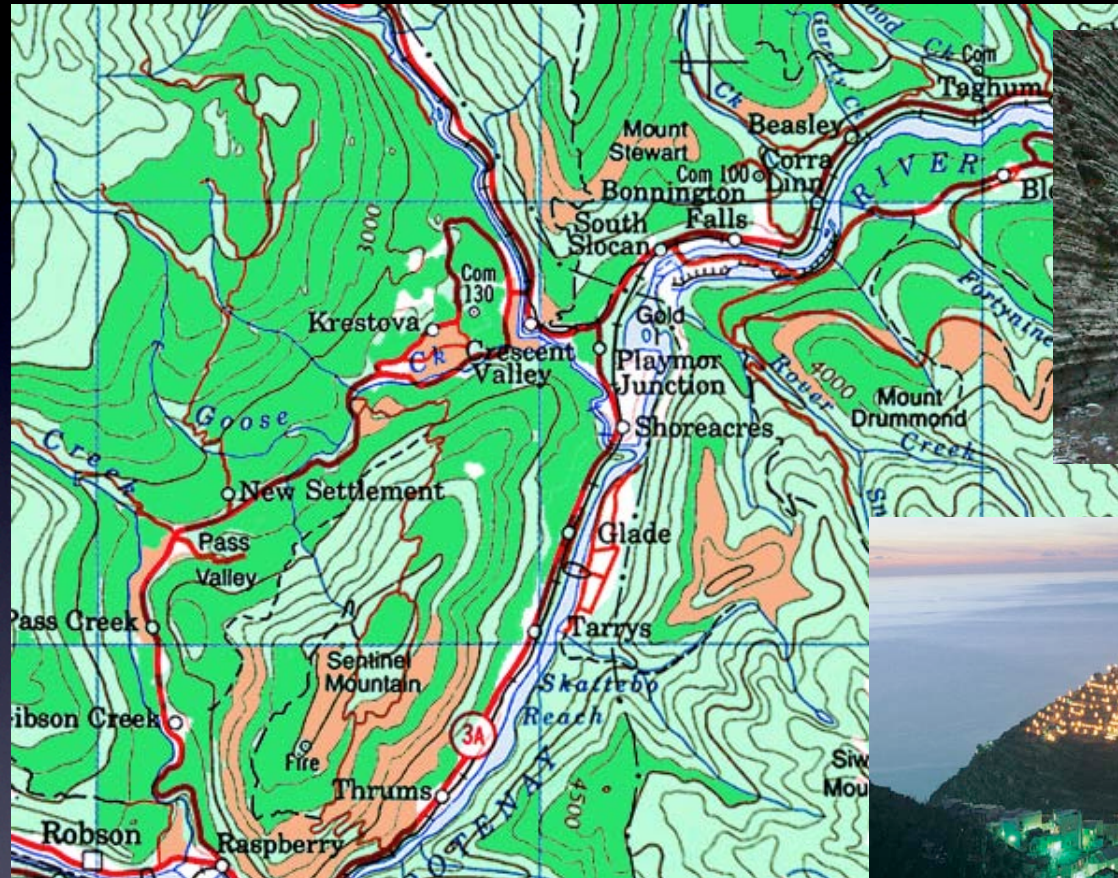


# ● Kootenay River Valley Hill-towns & Farms

Growth if  
necessary but not  
necessarily growth.

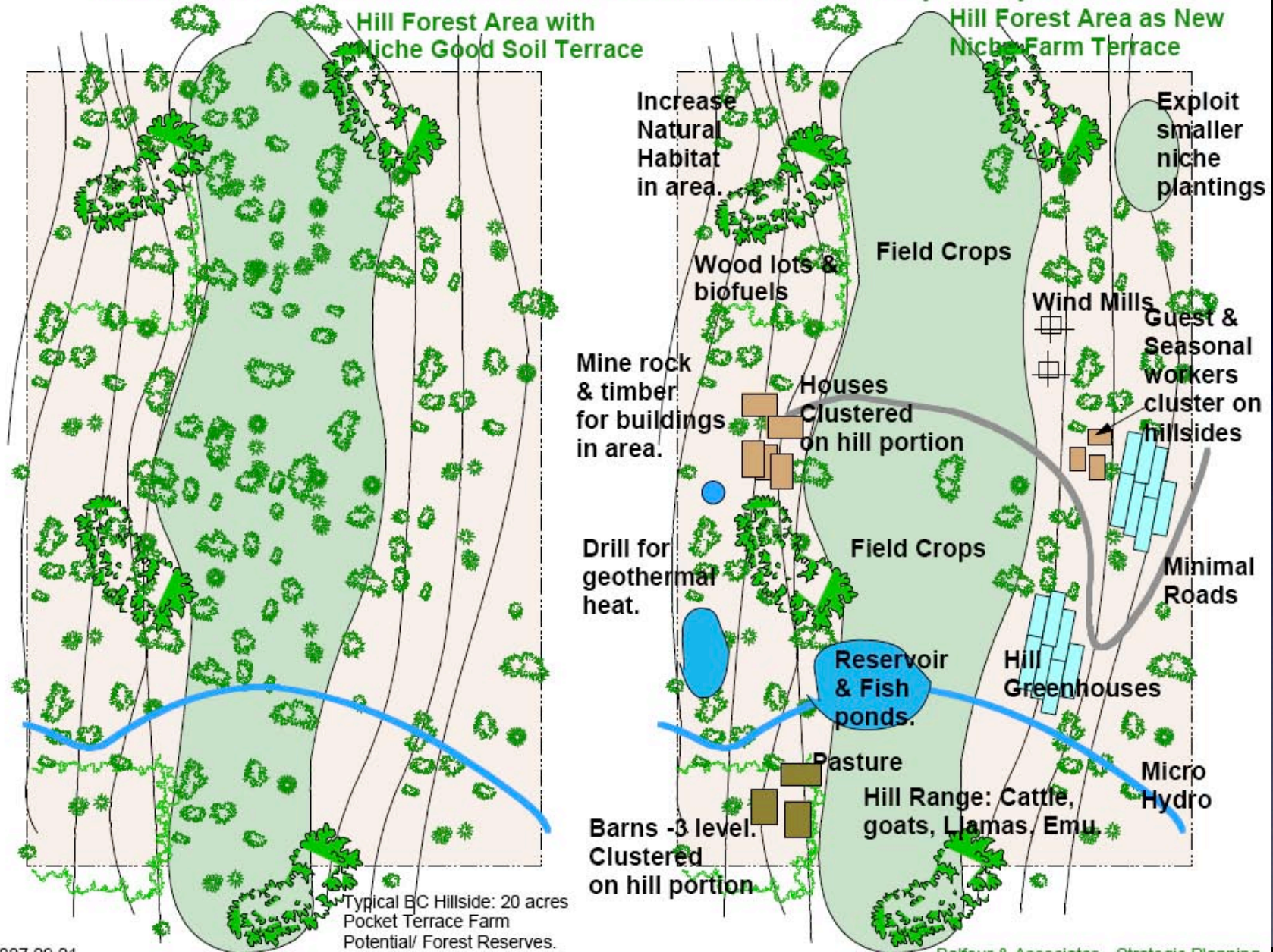
Railway  
rebirth  
&  
farm  
hamlets

And the reality of  
winter in the  
mountains....





## Niche Farms: Post Oil Homesteads & Hamlets: A Kootenay Valley Model



2007.09.01

Balfour & Associates • Strategic Planning

Balfour + Associates • Strategic Planning

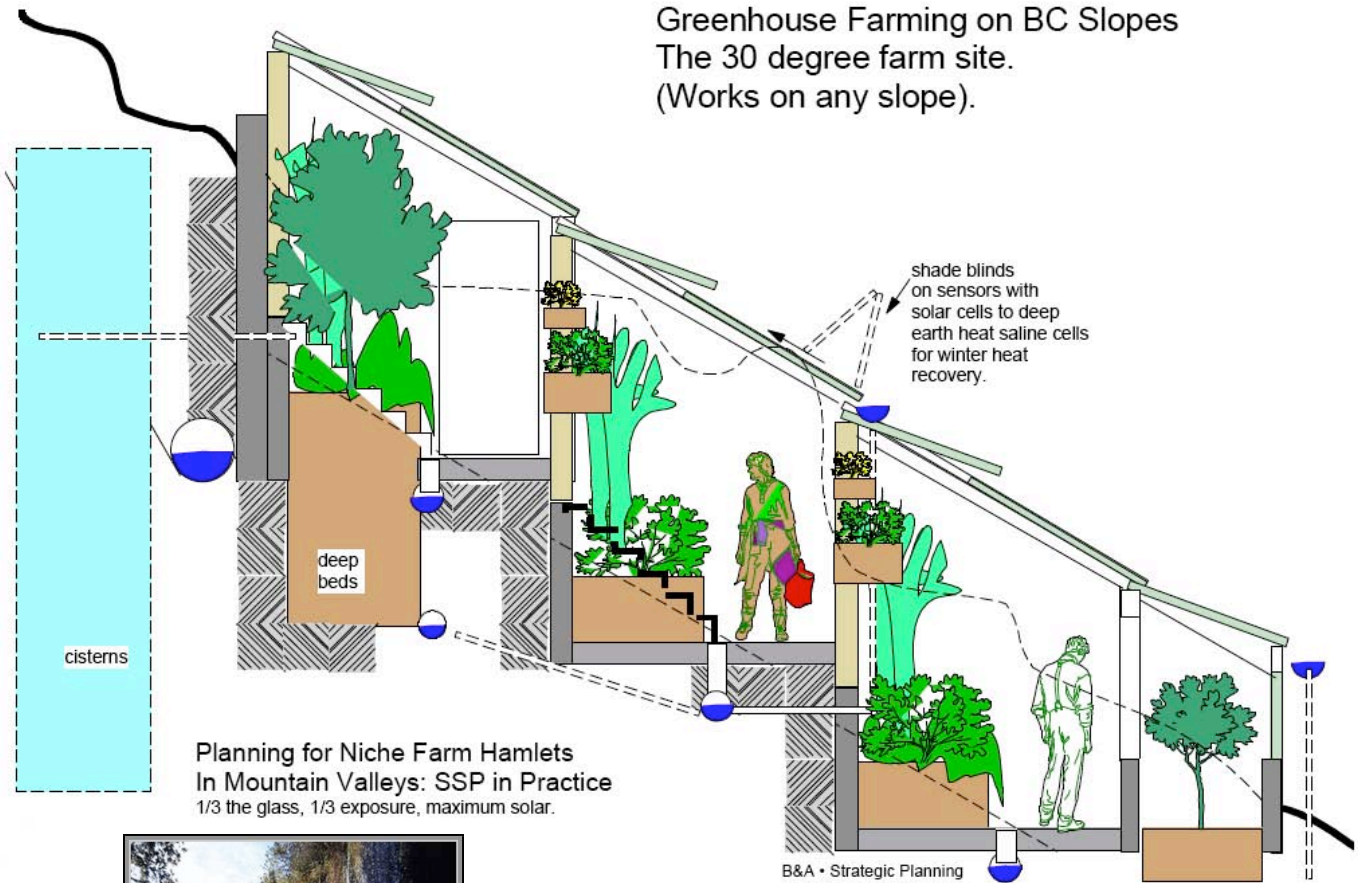




# Re-learning clustering & Land Conservation After Oil



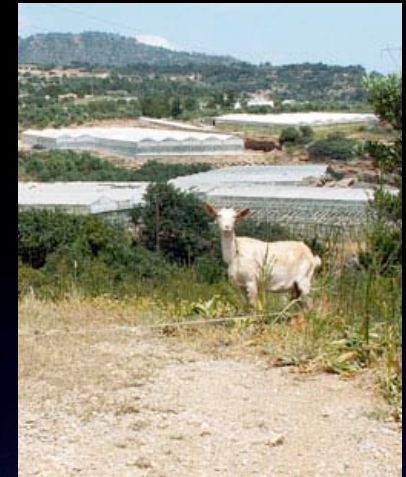




Planning for Niche Farm Hamlets  
In Mountain Valleys: SSP in Practice  
1/3 the glass, 1/3 exposure, maximum solar.







# Hills, glass & food.





# Scale of Solutions



Big footprint options not possible  
Dispersed villages- need autonomy but cooperation  
Housing clustering: energy & community fixes



Cooperative local economy vital  
Seasonal survival: a new reality  
Geothermal/earth sheltered towns  
New wood & coal energy base  
Extending growing conditions  
Over-wintering - in crops & greenhouses  
New animal husbandry vital  
Self reliance: good insurance.



Circle the  
wagons but let  
people in?



Old & New: alternate histories give more future options.

# Relocalization





