The future of Icelandic forestry in light of climate change

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Likely changes

- Average global temperatures will increase by 2-4°C by 2100.
  - Iceland will likely be close to average, with winter warming slightly more than summer.
- Weather variability will likely increase.
  - Increased frequency of extreme weather events?
    - High winds - salt spray and blow-down
    - Heavy snow - tree breakage and avalanches
    - Drought? - increased fire hazard

Likely changes

- Increased frequency of new pests and diseases.
  - Now we get 1-2 new pests on trees per decade.
    - We still do not have major pests such as bark beetles.
  - Often a period of epidemic population growth to begin with.

Likely changes (not all bad)

- Iceland will grow with respect to forestry
  - Suitable conditions at higher elevations
    - Using current lowland species
  - Longer summers and milder winters in the lowlands
    - Possibility for new forest tree species

Societal changes
(Trends – not predictions)

- More humans, mostly immigrants
  - More tax revenue
  - More working hands
  - More women in forestry
- Changing attitudes towards forests
  - ???
- Financing by the private sector

Current forestry goals

- Creating a forest resource
  - Timber and other benefits (multiple use)
    - Larix sibirica, Pinus contorta, Picea sitchensis, Populus trichocarpa
- Forest restoration
  - Soil conservation, habitat creation, biodiversity
    - Mostly Betula pubescens
- Recreation
  - Mostly close to urban areas
    - Many tree species
- Carbon capture
  - Until recently, a bonus along with other goals

Future forestry goals

- Carbon capture and storage
  - Financed by selling certified carbon credits
  - Private sector takes charge
  - Using mostly productive tree species
- Goes well with the other goals, but:
  - Pressure to maintain carbon stock
    - Emphasis on sustainability and resilience
    - Continuous cover forestry
    - Rules decided by certification bodies, then governments.

Main risks to sustainability and resilience

- Not using available scientific knowledge
  - For example, the natives vs. exotics discourse
- New pests and diseases
- Extreme wind events
- (warming, drought, heavy precipitation, fires and other risks are less important, at least in the next few decades)

Adaptation

- Research, Research, Research
  - Continue establishing species and provenance trials
  - Tree improvement programs for the most important species
  - Monitor tree growth
  - Monitor damage from pests, diseases and weather events
  - Educate researchers and provide them with jobs
  - Use science, not ideology, as the basis for decision making
    - (learn to recognize the difference between the two)

Practical steps (Presponses)

- More forest cover
- Prioritize
  - Promote efficiency
  - Promote variability
- Maintain forestry infrastructure
  - Seeds, nurseries, contractors, roads… and especially education
- Stop free-range sheep grazing

Thank you!