

Group – 5

Members:



A scenic view of a lake with a forested shoreline under a blue sky with clouds. The water is dark blue and reflects the sky. The forest is dense and green, with some trees showing autumn colors. The sky is bright blue with scattered white clouds.

Our Mandate

**Water Resources Management
From the Point of View of
Forest
Eco – system Services**

OUTLINE OF PRESENTATION

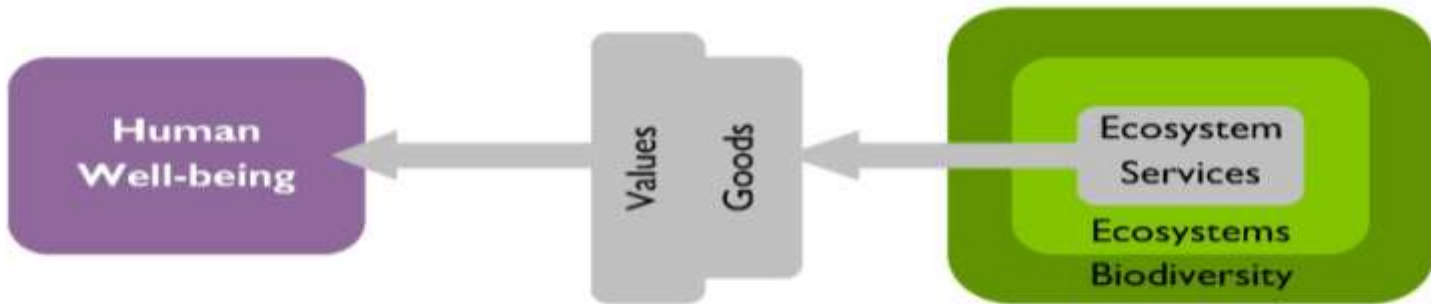
- Eco-system and Eco-system services
- Finland : water resources status
- Pollution of water bodies
- Improvement challenges
- Initiatives for water resource management
- People participation
- Indian scenario

ECOSYSTEM: UNITED NATIONS CONVENTION OF BIOLOGICAL DIVERSITY

*“An **ecosystem** is a dynamic functional unit consisting of all plants and animals (biodiversity) in an area, together with the nonliving, physical components of the environment (water, soil and air) with which they interact.”*

ECOSYSTEM SERVICES

- A framework for taking into account the underpinning role of the natural environment to the needs of society and the economy



Benefits of the ecosystem services approach

Understanding the full value of the natural environment enables:

- ✓ decisions on the natural environment that do not compromise benefits to society, business and the economy
- ✓ improved delivery of services through better use of the natural environment
- ✓ reduced business risk and increased business opportunity

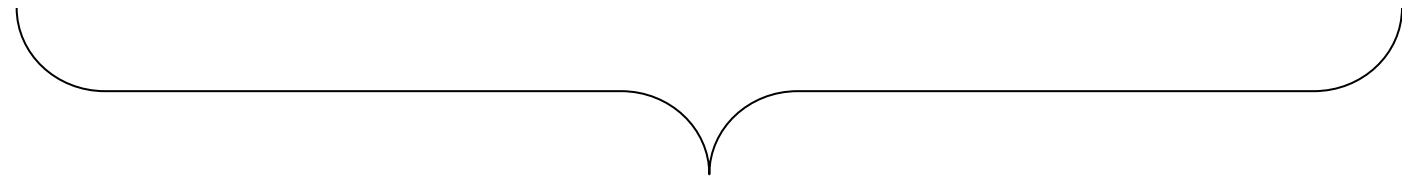
SERVICES PROVIDED BY FOREST ECOSYSTEMS

Provisioning - timber, food, clean air

Regulating - climate, flooding

Cultural - health, recreation and tourism

Supporting - soil formation, water cycling



Social and economic prosperity

PROVISIONING SERVICES -

These are the most obvious and are the varied products or materials that we extract from different ecosystems for human use in its broadest sense. They include plant and animal material for direct consumption as food, other plant or animal materials such as wood, plant fibers or skins and sinews employed in shelters and clothing, herbs of medicinal value and even water that is trapped in rain in elevated forested areas and fed into streams and aquifers, and even water that may be used to generate energy.

Summary:



- What ecosystem services are and why they are important
- Evolving interest nationally and internationally, including emerging government policy
- Relevance to Local Authority services

Ecosystem services and local authorities

- Conservation and management of the natural environment
- Use of the natural environment in delivering services
- Relevant contexts:
 - Regulatory activity
 - Decisions
 - Service provision
 - Engagement with partners

Local authority services

- ✓ Health
- ✓ Climate change adaptation
- ✓ Planning and development
- ✓ Integrated land management
- ✓ Management of local authority land
- ✓ Highways and flood alleviation
- ✓ Coastal and water management
- ✓ Economic development

ESTIMATES OF VARIOUS ECOSYSTEM SERVICES

Ecosystem services	Value (trillion \$US)
Soil formation	17.1
Recreation	3.0
Nutrient cycling	2.3
Water regulation And supply	2.3
Climate regulation (temperature and precipitation)	1.8
Habitat	1.4

ESTIMATES OF VARIOUS ECOSYSTEM SERVICES

Ecosystem services	Value (trillion \$US)
Flood and storm protection	1.1
Food and raw materials production	0.8
Genetic resources	0.8
Atmospheric gas balance	0.7
Pollination	0.4
All other services	1.6
Total value of ecosystem services	33.3

ECOSYSTEM ROLE

- plays vital contribution human well-being if society improves the design and management of water resource infrastructure, establishes more inclusive governance and integrated approaches to water management
- **Inland water ecosystems**—Rivers, lakes, and wetlands contribute to human well-being through recreation, scenic values, maintenance of fisheries and biodiversity, and allowing the ecosystem function well; and meeting human needs for potable freshwater and irrigation of farmlands

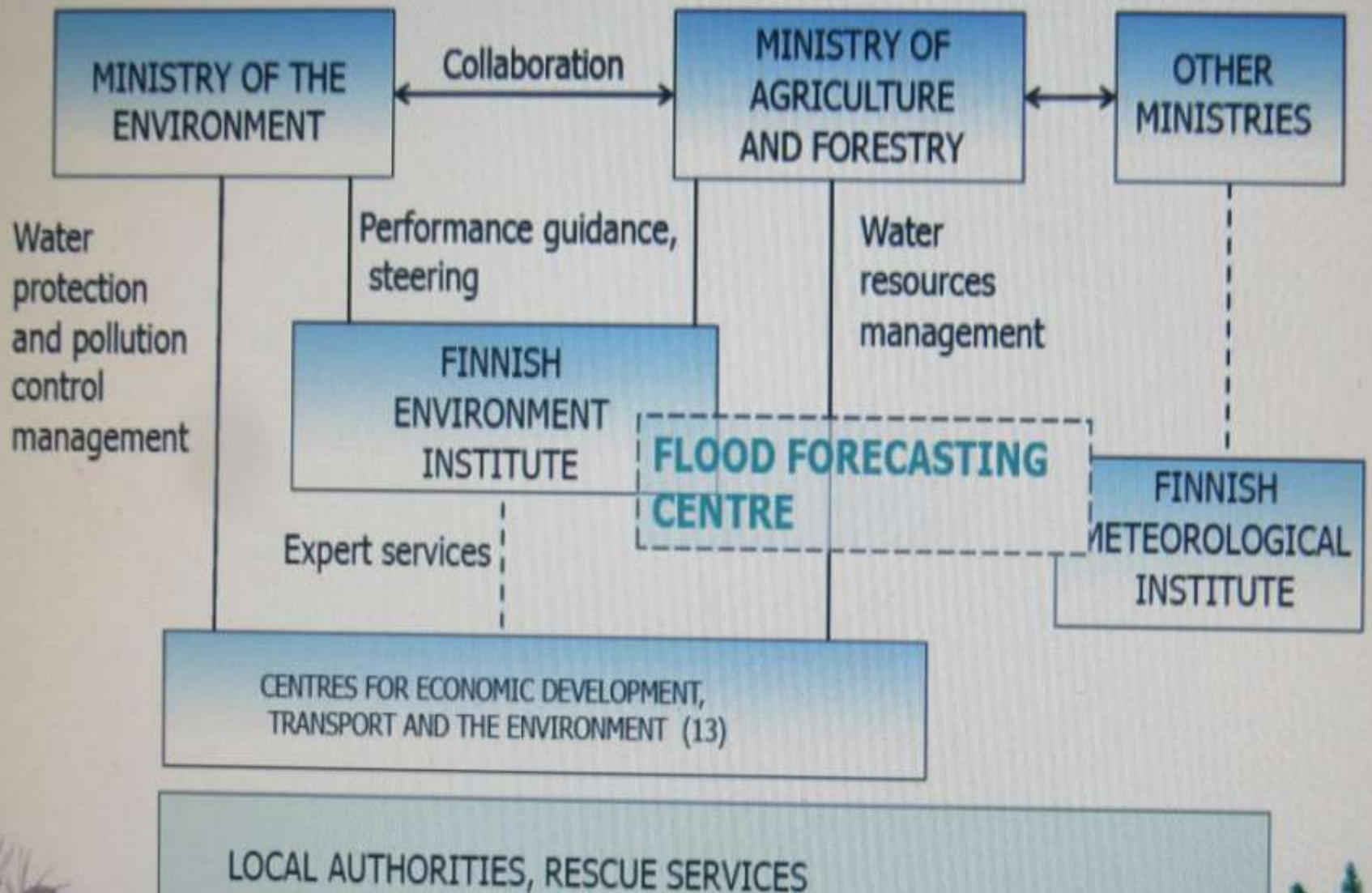
FINLAND :MANAGEMENT OF WATER RESOURCES

- Most heavily forested country in Europe- 23 Million Ha which is 74.2% (FAO)
- 12 Million Ha (1/3rd) of the total area is managed by the Finnish Forest and park Services “Metsähallitus”
- Water resource management- Ministry of Agriculture and Forestry

FINLAND :Management of water Resources

- 187 888 lakes and ponds larger than 500 square metres, and rivers totalling 25 000 kilometres in length.
- Finland's shallow lakes are easily contaminated by pollution. Even relatively low concentrations of excess nutrients, acidic deposition or other harmful contaminants can easily disrupt their sensitive aquatic ecosystems.

Water Administration in Finland



FINLAND :Management of water Resources

- Ministry of the Environment, Finnish Environment Institute and Finnish Game and Fisheries Research Institute
- A new assessment of the ecological status of Finland's waters shows that 85% of the surface area of lakes and 65% of rivers are in a good or very good state.
- But three-quarters of the surface area of coastal waters are in a worse state. The main problem is eutrophication

FINLAND :Management of water Resources

Eutrophication

- In Finland, over half of the nutrient load that causes eutrophication in water bodies comes from agriculture.
- Communities are still significant sources of nitrogen discharges,
- while sparsely populated areas result in a significant portion of Finland's phosphorous discharges.

Streams flowing in to lakes





Degradation of Water quality and reduction in water body of the lakes has been a major concern of the local people

Siltation of the lake due to deposit of silts eroded and transported through water channels was found to be the real cause



Deforestation and soil Erosion



FINLAND-IMPROVEMENT CHALLENGES

- Reduction of eutrophication
- Restoration of water course and habitats
- Reduction of hydromorphological pressures
- Manage risks caused by harmful substances

FINLAND-IMPROVEMENT CHALLENGES

- Management of risks in ground water
- Adaptation to climate change
- Protection of water related species and habitats.

FINLAND :Management of water Resources

- Institutional capacities

 - Regional water and Environment centres

 - which draw regional water resource development plans
 - Decision in planning is done at lowest level with public consultation and involving all stake holders .
 - at local level Municipalities have responsibility to safeguard water supply and sewerage

FINLAND :Management of water Resources

- **Initiatives for Water Resource Management**
- **Finland has prepared a folder of best practices on sustainable water** management which include the followings
 - Integrated water resource management
 - Efficient water consumption
 - New approaches for water protection
 - International co-operation on water management

FINLAND :Management of water Resources

- **Initiatives for Water Resource Management**
- **Access to drinking water** : 90% of Finnish population is covered by municipal network

water consumption:

water consumption has gone down from 335 l per person per day in 1970s to 240 lpppd due efficient domestic appliances and WC toilets and rennovated water lines . 50% water served is ground water.

FINLAND :Management of water Resources

Initiatives for Water Resource Management

- **Access to sanitation** : for 80% of Finnish population waste water is treated through biological chemical means , treated water is recycled .
- **Use of new technology** :
Dry Toilets in rural areas reducing nutrient discharge in water and also save fresh water and stops spreading of harmful diseases

FINLAND :Management of water Resources

Initiatives for Water Resource Management

Integrated water resource management and water efficiency plan 2005: as per mandate of world water summit 2002

Education , Training and Awareness :
through ministry of environment , ministry of Education and Regional environment centers .

FINLAND :Management of water Resources

Initiatives for Water Resource Management :

Strong legislation :

Revising pollution control legislation 2000
new Environment Protection Act was
enacted .

Measures and structures which have
effects on water resources are subject to
the permit as per Act

“Tohmajarvi Municipality”

A proactive Campaign by Association and local people to keep the area and the surrounding water bodies for meeting various ecosystem services for the local inhabitants.

Tohmajavari Municipality

- FORESTS OWNERS ASSOCIATION
- LOCAL MUNICIPAL CORPORATION (TOHMAJARVI)
- MR. JANNE RAASSINA-WATER EXPERT AND CONSULTANT



Tohmajavari



Tohmajavari



Tohmajavari



Tohmajavari



Other lakes in Finland



SOIL EROSION CONTROL MEASURES



INDIAN SCENARIO

- Planning commission of India 2007- importance of ecosystem and its services
- Objective of forest management planning (working plan code 2014)
- XI Plan-Repair Renovation & Restoration of Water bodies

RRR-Repair, Renovation & Restoration Program

- Improvement of catchment areas
- Increase in the capacity of water body
- Ground water recharge
- Improvement in productivity
- Development of tourism , cultural activities
- Increased availability of drinking water

Water Resource management

Thank you very
much for attention