Sustainable River Basin Management

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Module - 01

Lecture – 01

Part - 1

Welcome everybody to Sustainable River Based Management Module 1, Part 1.

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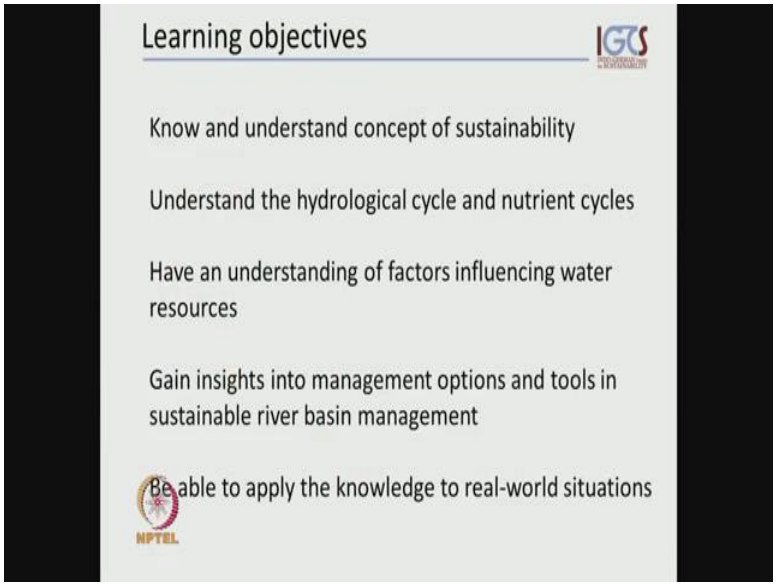

We will start with quick introduction. Our learning objectives are to know and understand concept of sustainability. We will try to understand hydrological cycles and nutrient cycles, you shall have an understanding of factors influencing water resources. You should gain an insight into management options and tools in sustainable river basin management and you should be able to apply your knowledge to real world situations.

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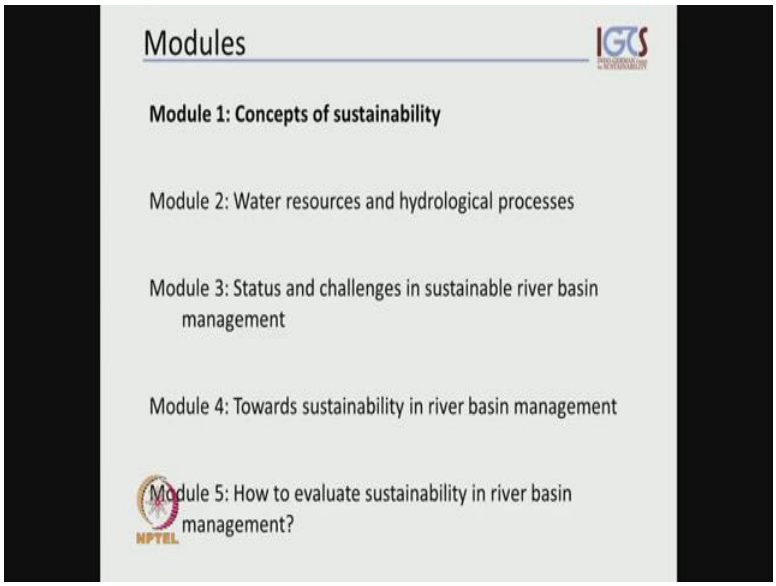

This course would be divided into 5 modules, concepts of sustainability, water resources and hydrological processes, status and challenges in sustainable river basin management. Module 4 will be on, ways forward in sustainability in river basin management. Module 5, the last one, on how to evaluate sustainability in river basin management and we start today with module 1, we will be a…

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We will be starting on July 1st and this course will end in end of August 2015; the final exam date will be announced. Whenever, in between those modules and the final exam,

you will have to complete 8 assignments. After each module, the dates are here; please take note of those important dates.

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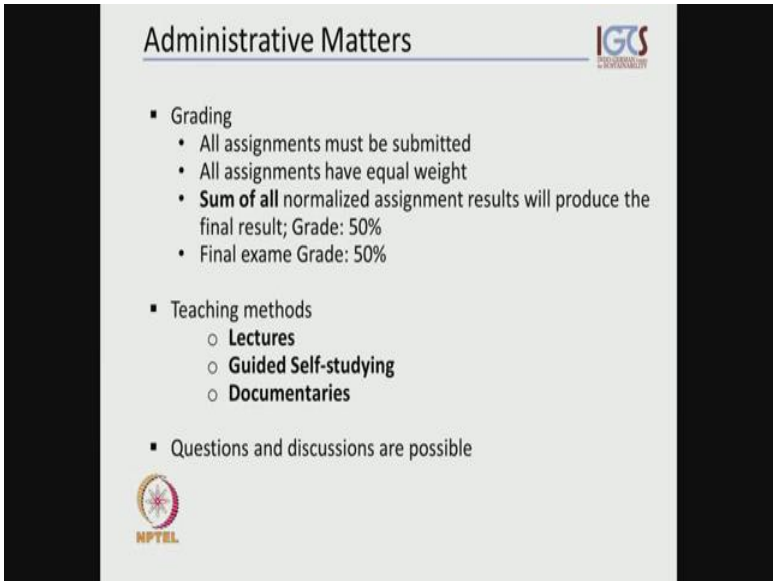

On administrative matters, want to give you insights on how we create this course, you have to submit all assignments; all of the assignments have an equal weight. And I will summaries those and create the final result on the part of the assignments; those assignments count 50 percent of the total. And then, you have to participate in a final exam, we have to be only physically present and that result for those of count 50 percent.

The teaching methods that we will be using are lectures, guide of self studying and watching documentaries and discussing those documentaries You can ask questions in a online and we can also have discussions on issues that are important to you.

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Now, on general literature on sustainability, just an introductory list that, you may get hold of yourself, to familiarize the surface of the concept of sustainability. Let us start with the definitions of the term sustainability; there are many different ways of describing sustainability though. At least 20 different definitions and I have selected only 3 here, which show you the range of understanding of the concept of sustainability.

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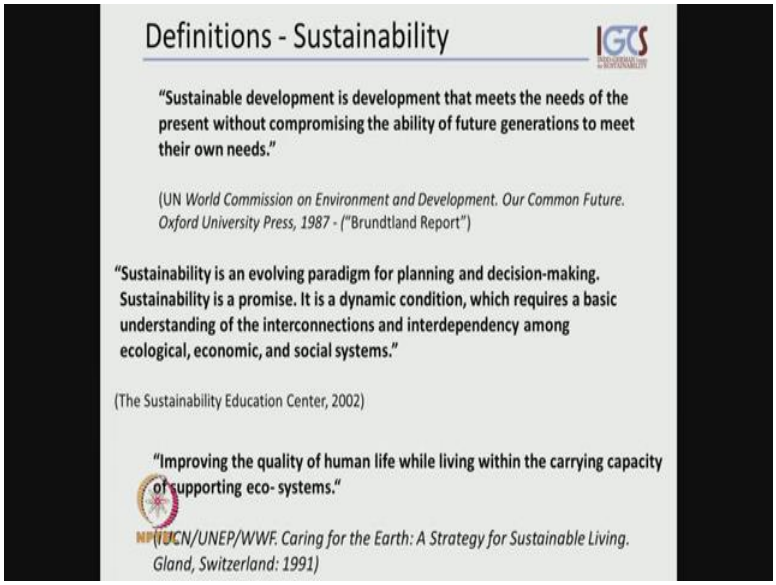

The most common definition that you may come across yourself are various, the one produced by the so called Brundtland report, which is sustainable development. This

development that meets the needs of the present without compromising the ability of future generations to meet their own needs. There is the definition, that is most unique and most wildly also published, but there are other definitions for sustainability, which give it a more practical fame like the one, which is sustainability education centre, which is the sustainability is an evolving paradigm for planning and decision making.

So, this is a promise, it is a dynamic condition, which requires a basic understanding of inter connections and interdependency among ecological and economic and social systems. So, it take us out of one time simple definition to a paradigm to planning and decision framework and it also shows us, as I said it as dynamic process. Something, that will be redefined, while we apply our knowledge by a proof of our knowledge, it also just shows us already the link or the need for an understanding of connections, linkages, dependencies of different systems. We will come back to this soon. And then also a third definition, which takes us frame forward to introducing a concepts of quality of human life, living conditions and carrying capacity of supporting eco-systems. And this is the definition that was brought out by conservation organizations.

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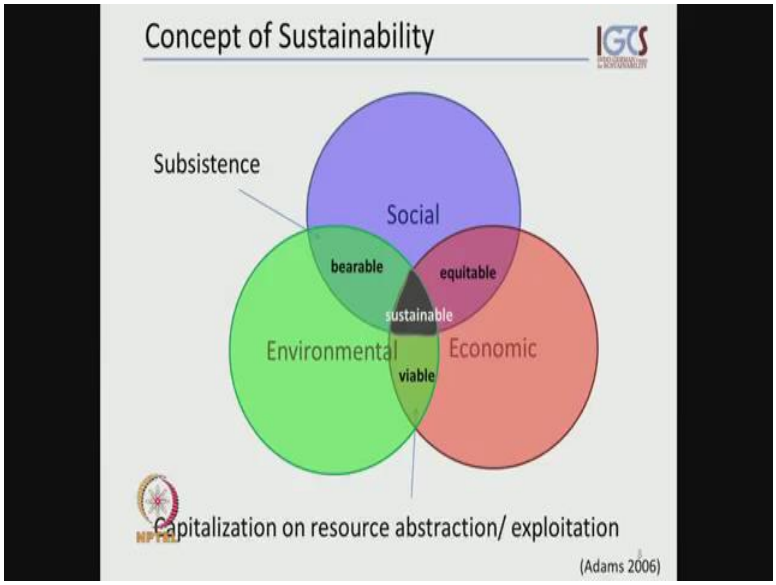

Now, keeping those in minds, we should think about concepts of sustainability in general, which will be applicable throughout all our course. In general, we have three spheres, the social sphere, environmental and economic sphere and all of them should in one or the other way overlap with each other. Those overlaps when usually not be

occurring in a regular way, but in a perfect situation, we can speak of sustainability that would be the case.

Now, if in how was it in our daily situations, the social and environmental sphere are the most overlapping and most pronounced sphere. Then, we would speak of conditions that would be bearable and that corresponds to subsistence living conditions say, occurring in many countries. If we would only focus on the overlap of social and economic spheres, then we would be putting our focus on the critical conditions and we will come back to the term in following lectures.

And if you would focus on environmental and economic overlaps, then we would be speaking of viable processes. Viable from a economic point of view, this would be, if we would ignore the social sphere in it, it would be a meaning, a capitalization on resource abstraction and exploitation of the environment. Now, taking all those together in a more or less balanced way, this is very refined or sustainable approaches. Sustainable river basin management would be falling into this overlapping, this three overlapping spheres here.

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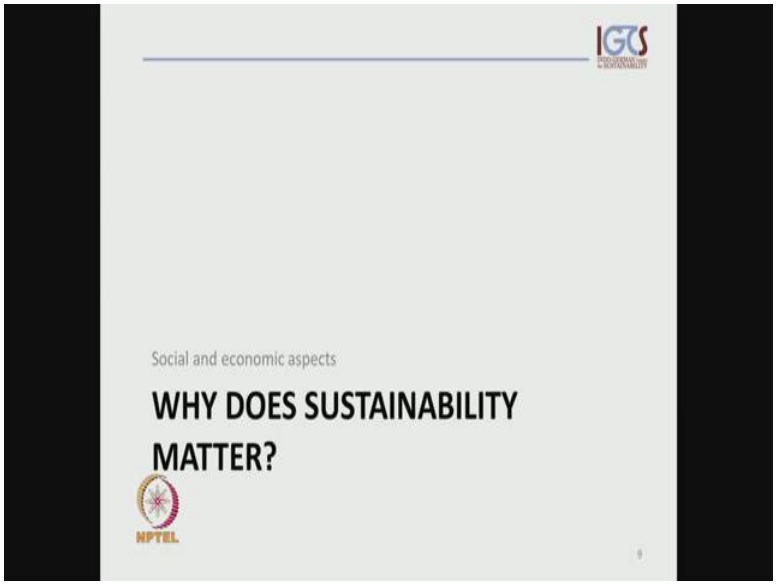

Now, why does sustainability matter? Let us look at the social and economic aspects to start with.

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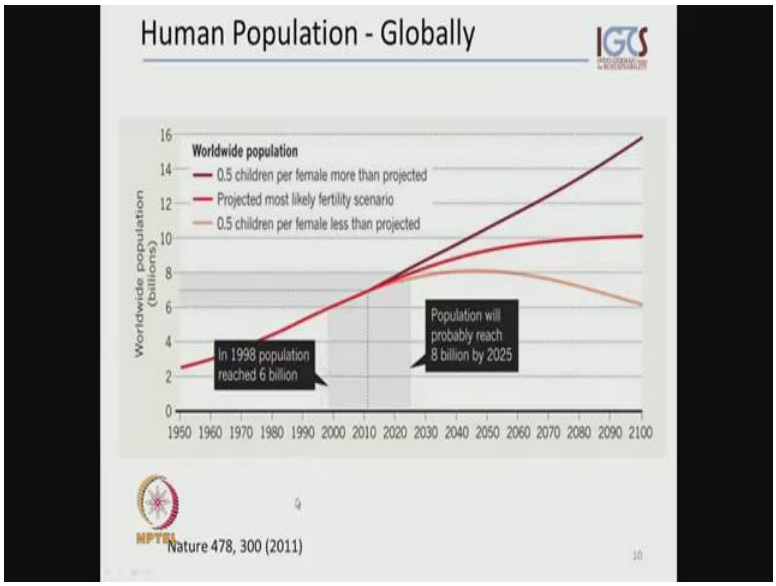

First of all, our human population at a global scale matters. This is a publication by nature 2011, which shows us a worldwide population in billions on this axis. And it shows us time, time scale here and it shows us different projections population in numbers as measured and then, projections for different scenarios. And what we can see is that, by now we have crossed the 7 billion mark already and depending on the projection, we will have a continuous increase in population or we may have a decrease in inflation point, where population will start to decrease.

And this is an interesting point here, which would take place in around a 2050 and we will, in coming lectures always compared to this a 2050 date, where many of them, where the tipping point, many of processes beyond a changes, major changes are expected to take place.

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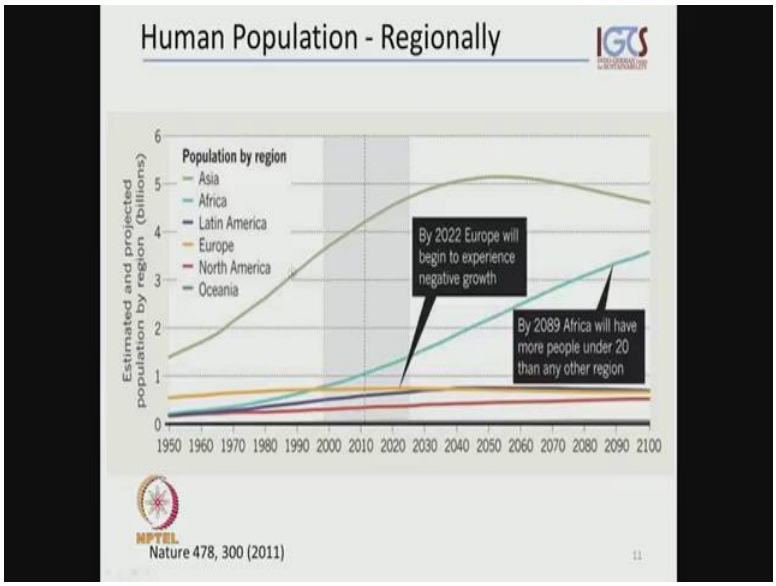

Now, if we take our population numbers and look at it from regional perspective, then you see a number of interesting differences between regions. Therefore, very high population number in Asia concentrated alone in Asia and the major inflation point or dipping point is expected to occur in 2050. We see that on the African continent our population will steeply increase and there is no dipping point yet to see. The expectation is that there will be very young, extremely young population concentrated in Africa, which puts challenges on all our systems education, health, labor and so on.

And then, we see that, on the other continents, developing there population below the 1 billion mark. You also see that some of the regions have a negative growth. Population numbers are decreasing already on which is expected in the next five years to take place.

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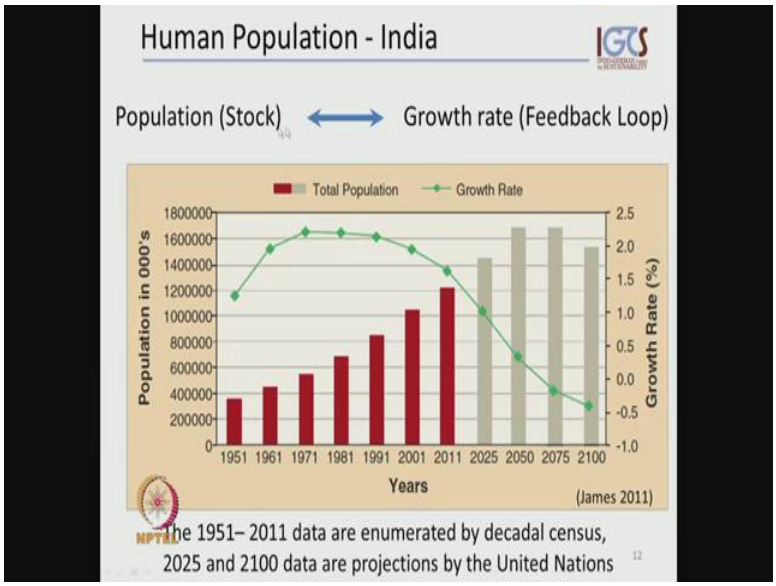

Now, assuming into what is going on in India, which is more interesting to us here in our growths. We have the scenario starting from 1951 is census data to 2011. We have population number here billions again and we see that, we have right now a population of around 1.2 billon in India.

An interesting information here is the additional graph is showing us our growth rate while our population numbers are still increasing, projected to increase up to the, aforementioned year of 2050. The population growth height has started to decrease already about 3 years ago. So, this is a typical relationship between a large stock in a system end feedback loop growth rate in this case as feedback loop, which response. influences our stock. The size of our stock and the larger our stock is the slower the responses whenever we try to influence or change that stock through our feedback loops.

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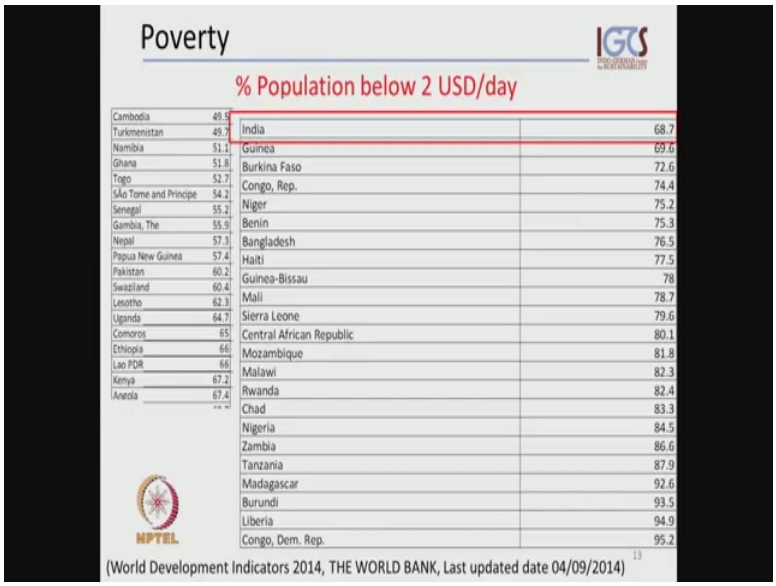

Another important element by sustainability matters is poverty and though we can debate whether this indicator is the most populate, I am going to use it here, just as an as a possibility to compare countries and manage it all. This shows present population that lives below 2 US dollar per day and we see that, many countries a long list of countries, where we have about 50 percent of population living in poverty at living this below 2 USD per day available. And among those is also India ranking of being at above 70 or 60, 9 percent of a population falling under this group.

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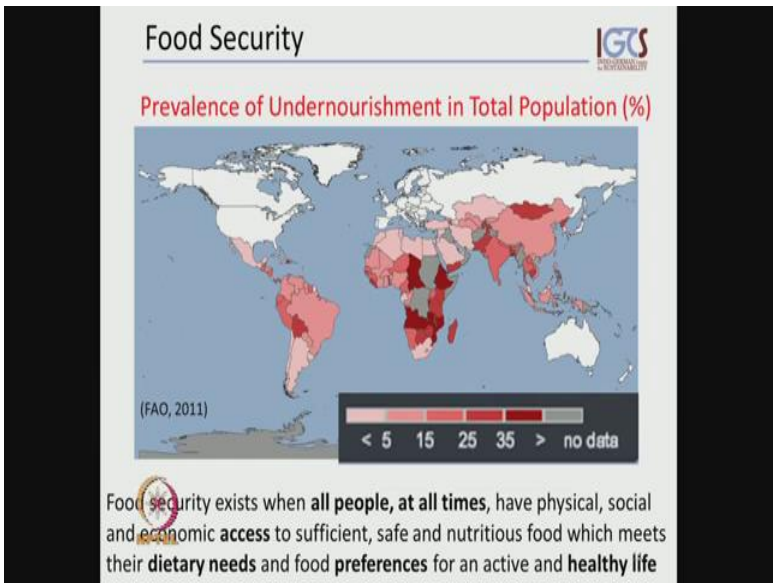

Now, this poverty, comes in additional an element that matter sustainability, which is food security and what we mean by food security is that, food security exists and all people at all times have access to a sufficient, safe and nutritious food, which means that dietary needs and food preferences for an active and health life. So it is a very comprehensive understanding of food security, this not simply providing one food, one type of stable food, but it is a comprehensive understanding of providing food to enable people to participate active in society.

Now, let us look at the global map for which shows as a undernourishment in total population and percentage. If what we see here set this comes from FAO 2011, now we see here is such the number of countries in white, which would be to know the 5 percent of under nourish people out of the total population of the country. And then, we see many countries even entire continents were we have large and about the quarter, more than a quarter of the country's population to be classified as undernourished.

So, this is the quite important to keep in mind, but we would we also see a clear split here between so called developing countries and the developed countries and will come back later to this term differentiation and how it existed of the matters in that way. But, in food security certainly, it does not matter and influences, how we two implement and look into the future and think you know it is in sustainable passways. And in addition, yet another additional element by from a social and economic perspective by sustainability matters is water and sanitation.

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I am not looking at poor countries, but specifically (refer time: 17:35) to India. India is a special case, also have very high number of people, practicing open defecation, which affects water quality, which affects living quality and a proficient of safe drinking water. We have about Indian looking just at India 90 percent of the total number of people in south Asia, who practice open defecation which is certainly an awareness problem also. And looking at the global, putting India into a global perspective here more than 50 percent of the world's population in India practicing open defecation.

So, we also have not a percentage, but here number presented 97 million people without access to improved sources of drinking water, which is in the context of the global map second only to China. So, all other countries have a fewer people, but you have to keep in mind the very high population number in India and China. So, looking at something positive numbers not presented just here, we have in India itself about 251 million people gained access to improved sanitation since 1990.

And this is the major achievement in terms of getting to individual, getting to people and improves individuals life, but you see that the challenges got a (refer time: 19:38). Now, would like to stop here for module 1 in part 1 and we will see as for part 2 again.